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THE THREE SYSTEMS OF LIFE INSURANCE

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THE THREE SYSTEMS

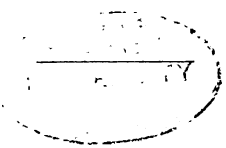
OF

LIFE INSURANCE

EMBRACING

I. THE LEVEL PREMIUM SYSTEM.
II. THE NATURAL PREMIUM SYSTEM.
III. THE ASSESSMENT SYSTEM.

Originally compiled by the late MERVIN TABOR,
(formerly actuary of the Insurance Department
of Illinois), and carefully corrected
and revised to the year 1900.



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THE SPECTATOR COMPANY.
1900.

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THE SPECTATOR COMPANY
NEW YORK

PUBLISHER'S PREFACE.

The first edition of "The Three Systems of Life Insurance" was prepared by the late Mervin Tabor, at one time actuary of the Illinois Insurance Department, and issued in 1885. So warm was the reception accorded the work on account of its being written in a manner so clear and concise, as to appeal to the public at large, that it speedily ran through several large editions, The Spectator Company having meantime purchased the copyright and electroplates, on the death of Mr. Tabor, and the work having since been issued under its auspices.

In this, the eighth edition, the publishers have caused the work to be carefully revised in accordance with the principles of modern life insurance practice. Inasmuch as the division of life insurance under three systems, as laid out by Mr. Tabor, has not undergone any material change, the same division has been followed in the current edition. The leading system is, of course, the level premium or old line, under which premiums remain fixed as at age of entry, a larger amount than is absolutely necessary being collected in the earlier years in order to avoid increasing the cost in later years when the increased number of deaths causes a larger drain upon the funds. The natural premium system is equally as scientific as the level premium, differing only by collecting for each year the actual cost as indicated by the mortality tables, which implies steadily increasing premiums. The assessment system merely aims to collect from year to year an amount sufficient to pay the claims actually incurred during that year; no provision is made for increasing cost, and, as a result, the assessments increase after a few years, both in number and amount to the great dissatisfaction of those holding assessment policies.

"Three Systems of Life Insurance" is not only an exposition of the methods of conducting the business, but is also largely historical. In revising the book, therefore, the publishers have kept in mind its value as a book of historical reference, and have caused such matter to be added as will bring the work up to date, thereby furnishing a condensed history of life insurance on general lines brought down to the year 1900.

"Three Systems of Life Insurance" has long been accepted as a standard authority. It gives a variety of information

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unobtainable elsewhere, and is written in such a simple and graphic style that the ordinary layman can understand every word of it. The work is not filled with technical terms or scientific formula. Wherever it has been necessary to use such terms or formulæ they have been carefully and clearly explained. It is hardly necessary to say that the book was originally written without bias or prejudice, and that the revision has been conducted in the same spirit. The publishers offer this new and revised edition with the confidence that it will serve for the enlightenment of the public on the important subject of life insurance as well as past editions have done.

THE SPECTATOR COMPANY.

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INTRODUCTION.

The following, from the introductory remarks of Mervin Tabor to the first edition of The Three Systems, explains the object of the work:

The idea of publishing the work here presented did not suggest itself until much of the material that it contains had accumulated for private use.

Many letters from different localities throughout the United States and Territories, and from Canada, asking for information, came to the author, covering a wide range of inquiry upon subjects involving the elementary principles of Life Insurance. The following, copied at random from a few of these letters, will convey an idea of their general scope:

1. *What is a Mortality Table, and where can I obtain one?*
2. *What is the difference between the reserve and the surplus of a company?*
3. *Why is the dividend on a Life Policy larger the tenth, than it is the fifth, year?*
4. *I have one policy that was taken out nearly thirty years ago, but the dividend this year is not so large as it was ten years ago. I have another that is only six years old, and the dividend has increased every year. Why is this?*
5. *Why can't Life Insurance be done the same way that Fire Insurance is?*
6. *Please explain Endowment Insurance.*
7. *What is Tontine Insurance?*
8. *What is meant by the expression, "Actuaries' 4 per cent."?*
9. *Please explain the new Massachusetts' Non-Forfeiture Law.*
10. *What do you think of the Homans plan of Insurance? Isn't it Assessment Insurance in a new dress?*
11. *Which is the best* ASSESSMENT COMPANY?
12. *An agent tells me that the New York Non-Forfeiture law compels all New York companies to pay a definite amount, in cash, for a policy after it has been running three or more years. Please explain this, How does it differ from the Massachusetts' law?*

13. *Is there any good Assessment Company that issues Endowment Life Insurance policies?*

14. *What is meant by "The Expectation of Life," a phrase used so often by Life Insurance men?*

15. *What are the sources of dividends in the "Old Line" companies? Why can't we pay less for insurance and not receive any dividends?*

16. *I want $10,000 life insurance to be paid for in ten years, as an estate to go to my wife and children after my death. I also want $10,000 payable to my boy, now six years old, when he is twenty-one, or to a trustee for him should I die before he does; and I want $10,000 for the next ten or fifteen years, the cheapest insurance that can be had consistent with security. Please give me the information necessary for an intelligent selection of companies, and send bill for services.*

17. *An agent has been in to see me several times trying to insure me for $10,000 on what he calls the "The Reserve Addition" plan, or "The Accumulation" plan, I think it is. I am to pay for it in ten years, and he says that at the end of nineteen years I will receive the $10,000, in cash, if I live until then, but if I die before that time my wife will receive the whole amount. Do you think a company can do such a thing? Please answer in detail and send your bill.*

18. *If I insure for $10,000, and die the first year, how can a company afford to pay my wife and children the $10,000? I don't understand it. Please explain and send charges.*

19. *What is an actuary? Do they have actuaries in fire insurance companies?*

20. *How can an* ASSESSMENT COMPANY *safely issue Endowment policies?*

21. *What are* REVERSIONARY ADDITIONS *or* DIVIDENDS?

22. *What is the difference between "*OLD LINE*" insurance and* ASSESSMENT *insurance? Are not the principles upon which they are based the same?*

23. *Is there any good* ASSESSMENT COMPANY *that makes assessments only three or four times a year, at stated fixed dates? Please reply.*

24. *Why are the "*OLD LINE*" called "*LEVEL PREMIUM*" companies?*

25. *Why is it necessary that so many of the Mutual "*OLD LINE*"*

companies have so much money "in reserve" as they call it? If they are Mutual, why don't they pay back to their members this money, and not pile it up to be preyed upon, perhaps, by avaricious officers? I don't understand it. Please explain.

26. *What is a "natural premium"?*

27. *I have had a policy in the ——— Company for nearly sixteen years, and I asked what they would pay me for it, in cash, and they won't pay a red cent! They say that they are selling insurance, not buying it.* (This gentleman describes his policy—tells how much he has paid on it, in cash, and wants to know if it is worth anything.)

The above extracts from a few of the thousands of letters received sufficiently indicate the eagerness with which the general public are seeking impartial and reliable information on the subject of life insurance. One object, therefore, in the publication of this book, was to more fully supply this demand. Nearly every question given above is answered in this book more completely than could be done by letter, and at much less expense to the correspondent; besides it gives much additional information that could not possibly be communicated in one or fifty letters.

The book has been written from an absolutely impartial stand-point, as the reader will readily perceive in the perusal of its pages, and therein consists one of its principal merits.

The Three Systems of Life Insurance find expression in the different conditions, tastes and surroundings of the insured and the insurable, in every community. They exist, because there is a demand for them.

One person desires cheap insurance combined with Investment. The investment is the principal idea. He would not take the insurance, no matter how cheap, without the investment; but to secure the investment, he will accept the insurance. This man represents a large class in every populous community. The Level Premium System, with its Endowment and Accumulative Dividend policies, by whatever names designated, supplies the demand.

Another wants Life Insurance as an estate. He thinks that every one who has a family to support, ought to indemnify them against possible loss, and consequent suffering, by his death. He does not regard life insurance as an *investment*. Indemnity first; an estate, afterwards, are the leading ideas. He believes that he can take care of his family while he lives, and, if the payments be limited to ten, fifteen or twenty years, he can pay for such a policy during the productive

period of his life. He wants a good policy contract; one that will be Non-Forfeitable and incontestable, after a certain number of years. If he were to become a lunatic after the payment of several premiums, and were to commit suicide, perhaps, he does not want to involve his family in a lawsuit with a rich corporation. If from reverses in business he were to become despondent, and dissolute in his habits, he does not want his reserves in the company's possession confiscated. He wants a policy-contract—and he will accept no other—that, after the payment of two or three years' premiums, in cash, will be, *without further stipulation or negotiation*, good for a certain amount of paid-up insurance covering the whole period of life; or, one that will be extended for its full face value until the reserve has been exhausted in payment for such extension. Dividends with him are of secondary consideration. This man represents a very large class, and its demands must be responded to. If a selection of companies be wisely made, **The Level Premium System**, with its 10, 15, or 20 annual payment life policies, fully supplies the demand.

There is another who represents a different class from those already mentioned. He wants life insurance; believes in it, but thinks that he can handle his own money better than any insurance company can handle it for him. He can make his own *investments*, as he expresses it. He wants pure insurance, for a definite amount guaranteed in the policy, without any "ifs" or "provideds" about it, and he wants it for only the productive period of his life, and it must be cheap. He prefers to pay for it, quarterly, *in advance*. When he pays his premium, he wants to know how much he is paying for *insurance;* how much for *expenses*, and how much for *contingencies*. He is willing to pay an equitable amount, from quarter to quarter, for a definite amount of insurance, including expenses and contingencies, but not one penny, additional, to accumulate in the treasury of the company, and that can *not* be used, if necessary, in payment of current death claims. He is willing to pay for such insurance at an increasing cost from year to year, as age increases. To this demand from a very numerous class, **The Natural Premium System responds.**

And there is yet another who represents an *entirely* different class. Neither of the two systems named conforms to either his *ideas* or his *purse*. He wants to pay for a thing when he gets it; not before. The idea of fifty or a hundred, or *several* hundred individuals, more or less, associating themselves together in a kind of society, or brotherhood, and, whenever one of their number dies, each of the remaining members to pay a certain sum named to the bereaved family, this plan of insurance, as he calls it, seems to commend itself to him. They may all be engaged in the same occupation, conductors, engineers, &c., &c.;

or, they may be employed in the different departments of the same corporation, or of similar corporations in different parts of the country; or, they may be members of the same secret society, board of trade, or produce exchange, and, although no definite sum is named to be paid to the widow and children of a deceased brother, yet each contributes what he had pledged, when the emergency occurs. Such societies exist in response to the demands of a very large class of respectable people. They are called **assessment societies.** It is true that not one scientific principle upon which sound life insurance is based—except that of association—enters into the organization of this kind of societies; but in thousands of instances the contributions, thus made, have paid all the funeral expenses, and a very considerable sum has been left with which to provide shelter, food, fuel, and clothing for the bereaved family! Who can have a heart so pulseless and cold as to not feel glad that the otherwise shelterless, homeless, penniless, widowed mother, and the fatherless children have thus found relief, though it be but temporary, through the benefactions of these *most primitive* assessment societies? In some of them are to be found well to-do men. Many of them are insured in *other* organizations, and in the **Level premium companies,** but they have become members of these societies, mainly, in a great many instances, to help and encourage those who are not able to pay for any other kind of indemnity. Among them are foremen of the different departments of large manufacturing establishments, and, not infrequently, the manufacturers and the railroad officials themselves.

There is another class of assessment societies that has been organized on *quasi* scientific principles. A mortality table, or the rates of some Level premium company, *was consulted;* but, in a large number of cases, the leaders who took the initiative in the organizations, were not sufficiently familiar with the science of life insurance to know how to utilize them. The membership is separated into classes, according to their ages, each class including several ages. "Once in a class always in the *same* class," is their motto, and the assessment for each death is never to be increased. This distinctive feature is kept well in the foreground as one of the reasons for becoming a member. "Your assessment will never be increased." The reason given by one of this class, for not increasing the rate of assessment, as the age increases and consequently the *cost,* is the following:

"*And as they advance in age the cost to a member does not increase, for every death in the ranks is replaced by a vigorous young member, and the average mortality forever remains about the same.*"

The organizers of this class of societies did not seem to comprehend the fact that when a member was classified at age 60,

for instance, with a permanent rate of assessment at, say, $1.80 for each death, he might live to be 75, when the cost of carrying him would be more than three and a half times as much as when he entered the society. It is at this class of societies that the Level premium companies have fired their most effective missiles, and with the most fatal results. Hundreds of them have run for a few years and then retired, the direct results of *unscientific rating*. Such societies may be found all over this country, struggling to perpetuate an existence. Their efforts remind one of an attempt to build a high tower, at an angle of thirty-three and one-third degrees off the perpendicular. Such a tower may be built, quite high, if the base be broad; but, if continued, after a time the center of gravity will fall outside the base when the structure will tumble; not necessarily because the workmen were inefficient, nor that the bricks and mortar were of bad materials, but because they were building against the great law of gravitation. It might be propped up for a time, and the work of construction be continued, but eventually the structure will fall to the ground, a shapeless mass of bricks and mortar. Thus has it been, and it always will be, with *this class* of assessment societies. When one of these has been in existence long enough for its center of gravity to fall outside its base, it has tottered, reeled, and then fallen to the ground. They have fallen like dead leaves of the forest before the autumnal blasts! There is nothing known in the whole range of life insurance mathematics and experience that can compensate for such unscientific rating. New blood can not do it. It may postpone the day of retribution, *for several years*, even, but it is sure to come. It is the penalty for violation of the great law of mortality, that pervades the entire human family.

It is not the province of this work to advocate any *one* system of life insurance to the exclusion of the others. Its purpose is to portray the characteristic features of the THREE SYSTEMS, and to point out the requisites for soundness and permanency as dictated by scientific and recognized business principles. No comparisons are made except to define technical terms, and to illustrate principles. The examples of *real* policies used quite freely are for the *sole* purpose of illustration, and, in order to avoid the very appearance of *favoritism* the names of the companies that issued them, and, also, of the persons insured by them, are purposely omitted.

Considerable space is occupied in explaining the various forms of insurance, because there seems to be at the present time a demand for unbiased and reliable information on these subjects.

Tontine insurance was vigorously assaulted for years through the leading press, East and West. Mr. Wolcott, of

the Ohio Senate, expressed it in the preamble of his resolutions, calling for an investigation of the subject, as follows:

"WHEREAS.—Complaints for several years past have become general in Ohio, against the inequitable and unjust plans and methods of the Tontine insurance business as conducted by such companies foreign to Ohio; and,

"WHEREAS.—The leading journals of this and other States have recently made startling exposures, if true, of such plans and methods, which are most unjust to policy-holders in such companies; and

"WHEREAS.—Legislation seeking to arrest abuses and to protect the people of Ohio has been instituted by this GENERAL ASSEMBLY; now, therefore, for the purpose of aiding such legislation and furnishing necessary information to the insurance department of Ohio as a basis for future legislation, *Be it Resolved, &c., &c.*"

The resolutions, in full, as well as the committee's report after it had completed its examinations, may be found in the following pages:

Considerable space has also been given to the discussion of the Massachusetts' Non-Forfeiture law of 1881. There seems to exist a difference of opinion with reference to the cash-surrender value feature of this law. A correspondence was therefore had with all the Massachusetts companies, and with the Hon. Elizur Wright, with reference to that particular feature of the law. This correspondence is both interesting and instructive, and it has been given, therefore, to the readers of this book, together with several *assumed* examples of policies illustrating the *general* features of the law.

As this book has been written mainly for the public in general, extreme care has been exercised in the use of technical terms. If forced to use them they have either been fully defined in preceding pages, or they are explained where used. Such expressions as Actuary, Reversionary Dividends; Actuaries' 4 per cent; American 4 per cent; Net Value of a Policy; Legal Reserve; Tontine, Semi-Tontine, Accumulation, Distribution, etc., etc., are defined in their appropriate places.

The attention of the reader is called to the analysis of **Endowment Insurance**, in Chapter IV, commencing on page 29. The **Endowment** is a very popular form of insurance, because it provides indemnity in a *double* sense; indemnity to the family or other beneficiary, in the event of the death of the insured within a specified period of time—usually ten, fifteen, twenty, or twenty-five years—and indemnity against possible want and suffering at some future time growing out of financial embarrassment. Much the larger portion of the payments made on an endowment policy is guaranteed to earn compound interest, whether the insured die during the endowment period or live until its expiration. This subject is fully illustrated by *assumed* and *actual* examples of policies.

The article on Life Insurance Failures, page 54, taken from a pamphlet entitled "Life Insurance," etc., published by the Globe Newspaper Co., Boston, is worthy of careful perusal.

The Article on Life Insurance Expenses, page 59, by which the expenses of life insurance companies are compared with those of fire insurance, and railroad corporations, will be a surprise to those who are not already familiar with the facts.

Chapter VII., page 63, commences the analysis of The Three Systems of Life Insurance, beginning with the Level Premium system. In this and the following chapters the distinguishing characteristics of the Three Systems are discussed, together with The Requisites for Soundness and Permanency. The reserve in the Level Premium System; the reserve in the Natural Premium System, and the reserve in The Assessment System, are, each, plainly defined, so that anyone of ordinary intelligence may not only understand them, but also detect their differences. The reserve in The Level Premium System is entirely different from that in either of the other two Systems. It means accumulation, and can only be used in payment of a claim when the policy on which it is accumulated matures by death or otherwise. It constitutes more than ninety per cent. of the entire assets of all the Level Premium Companies. The reserve on a policy in the Natural Premium System is at its maximum at the beginning of a policy year, and entirely disappears at the end of the year. It is all used in payment of death claims during the year, but it must be used gradually. In the Level Premium, and the Natural Premium Systems, insurance mathematics and insurance laws define the nature and prescribe the amount of their respective reserves. The mathematical and legal tests are rigidly applied to all policies, in force, at least once every year, by the Insurance Departments of the several States in which these companies are doing business. But the reserves in the Assessment Companies are, to a large extent, entirely voluntary on the part of the societies themselves. They can provide for a reserve, as the better class of them do, or not. It can be used in payment of current death claims, at any time and in any amount, even to the entire exhaustion of the fund itself.

Not only are the functions of these different kinds of reserves discussed in the chapters alluded to, but also the other elements entering into the formation of a level premium.

The Tables, some twenty-five in number, are a very prominent and useful feature of the book. The Actuaries', and the American Experience Tables, are given in full, with additional columns, in each, showing "Per cent. of Deaths to the Living"; "Expectation of Life"; "Level Annual Premium to Insure $1,000 for Life"; and "The Natural Premium to Insure $1,000, one year—ages 10 to 100, in the Actuaries', and 10 to 96 in the American." In addition to the usual compound interest tables, will be found several new ones, and also a table showing the amount of $1 per annum, for 50 years, at simple interest.

The several articles on Interest; Mortality; How Mortality Tables are Constructed; the Reserve Element, The Mortality Element, and The Expense Element of a Level Premium; The Sources of Dividends, and The Several Non-Forfeiture Laws of different States—together with other valuable information, constitute a popular treatise on the subject of life insurance.

CHAPTER I.

FIRE INSURANCE.—LIFE INSURANCE.—MAN AS PRODUCTIVE CAPITAL.—THAT BUSINESS BLOCK.—THE SUCCESSFUL CAPITALIST.—THE YOUNG BUSINESS MAN.—THE LAW OF MORTALITY.—HOW MORTALITY TABLES ARE MADE.—THE TWO TABLES USED MOST EXTENSIVELY IN AMERICA.

Fire Insurance is protection against loss by fire, and it is based on the productiveness of the property insured—present or prospective—and the possibility of its destruction by fire.

Life Insurance is protection against financial loss by death, and it is based upon the productiveness of the person insured—present or prospective—and the absolute certainty that he will die.

A healthy body, a strong will, an active brain, and a natural aptness for business are the most productive property in the world. It has been said that when time was young, only two human beings lived on this earth. They lived in a garden, and fig leaves were their clothing. There were no business blocks, no railroads, no banks, no palatial residences, no trade, no commerce, no money, no art, no science, no culture—*no material wealth.* All of these have since been produced by the brain of man. One generation after another has lived and passed away, each contributing *something* to what now constitutes the wealth of the world! One hundred years hence every man, woman and child now living will be dead. The exceptions only prove the rule. Man, truly, is very productive, and there is nothing more certain than that he will die.

Your annual income on that business block is $20,000, more or less. You keep it well insured. You even have the *rental* insured. Not because if it were to burn your family would be paupers, or that you would experience other than slight inconvenience from it. It is productive property, liable to burn, and it is business like to protect such property. If you owned a *thousand* such blocks you could assume the risk, yourself; but you own but *one* block, and you can no more afford to carry the risk on one block than you can afford to carry one letter to San Francisco for *two cents.* The companies can carry the risk because they are carrying the same kind of risks on thousands of

other blocks, and their receipts from *all* pay the losses on the *few* that burn, and there is still a margin left for profit.

Your block earns a handsome income. *You* produced the block. Which is the more valuable property, you or the block? Which is more liable to perish; the block by fire, or you by death? Which would be attended with the more disastrous consequences, in a strictly financial sense; the destruction of the block by fire, or your death, in the next thirty days? Would the destruction of the block, uninsured, impair or incumber the value of your other property? With no insurance on yourself, would not your death, within the next thirty days, impair the value of your estate at least twenty-five to fifty per cent.? The average duration of a *class* of lives is certain, but there is no certainty of the duration of *one* life. When you have your buildings and merchandise insured, you protect *yourself* against what *may* occur; but, when you have yourself insured, you protect your *family* against what *must* occur. Fire insurance is protection against a *possible* calamity; but life insurance is protection against an absolutely *certain* calamity.

One may possess those very rare and indefinable qualities of mind that always insure success. Everything he touches changes to gold dollars and a great many of them. When he purchases stocks, they are at the lowest; and when he sells, they are as mysteriously at the highest. Under his magic touch wealth increases, he hardly knows how, so natural is it for him to control the wealth producing elements that surround him. When his plans ripen, they stand out in bold relief, emphatically his own, and are tenaciously carried out to a generally successful issue. He seems to be impelled by a force which he has no power or inclination to resist. He loves to watch the mental machinery within, working so admirably, and, with rare exceptions, accomplishing desired results. But this valuable machinery will not always last. His grasp of the lever will be gradually loosened. He will trust to others what he once thought could only be done by himself, and he thought rightly. At this juncture men of princely fortunes, by one single misstep, have lost all. Some of our wealthiest men, conscious of this approaching epoch, have "hedged," by investing largely in life insurance.

There are other younger business men, whose fortunes are not yet made, and who, utilizing the experiences of others, have invested quite extensively in Endowments, Accumulative Dividend policies, and other forms of Life Insurance, paying for them during their present productive periods of life. These insurances, in the event of premature death, will constitute an estate, together with other accumulations, as large, probably, as if they had lived their full measure of days. These young men have learned that men die, and that they sometimes die in the full strength of manhood, when their

prospects are the brightest, before their well-matured plans have had time to work out expected results, and just when they have reached the threshold of success. They have seen such untimely deaths bring financial loss, and sometimes utter ruin, to bereaved families. It was like the freighted ship sinking in full view of the safe harbor; or the costly building going up in smoke and cinders! These representatives of American enterprise are hopeful, for they have reason to be, but there still remains a period of uncertainty between hope and accomplished results, and they have thus bridged it over by the only method known and approved by the best intelligence of the century.

THE LAW OF MORTALITY.

"Mortality," says **Dr. Southwood Smith**, "is subject to a law, the operation of which is as regular as that of gravitation."

Mr. Babbage says: "Nothing is more proverbially uncertain than the duration of human life when the maxim is applied to an individual; but there are few things less subject to fluctuation than the average duration of life in a multitude of individuals."

Mr. Walford says that the average duration of life in Great Britain at the present time—1867—is 41 years; in France 40; in Sweden, 39; in other countries progressively downwards until the average throughout the world is found to be only 33 years. In Rome, thirteen hundred years ago, the average was much the same as in England now. We know, however, that the duration of life at all ages has increased considerably during the past century. Amongst the nobility and gentry of England, the expectation of life at the age of 84, is found to be four years; and, amongst the poor fishermen of Ostend it is precisely the same. **Mr. Walford** closes his remarks with the following remarkable statement:

"We have the very best of authority for stating, while the mortality of all the other epochs of life is affected by country, by station, and by a multitude of influences arising out of these and similar circumstances, the concurrent evidence of all observation shows that at this, and the like advanced ages, the mean term of existence is nearly the same in all countries, at all periods, and amongst all classes of society."

The Hon. Elizur Wright, in his fourth annual report to the Legislature of Massachusetts, says: "Observations on the population of particular localities, and of entire nations, on annuitants who have the strongest pecuniary motive to live, and who have often been selected for their strength of vitality, and on insured lives that have an almost equally strong pecuniary motive to die promptly, have resulted in scales of decrement differing so little from each other and from a regular curve, that one must

be profoundly skeptical not to believe in the existence of a perfectly graduated scale, curve or law, which nature works after as her pattern or type."

MORTALITY TABLES.

The Mortality Table is the foundation upon which the science of Life Insurance is constructed. Without it the business would be entirely speculative. "Tell me a man's companions and I will tell you his character," says a distinguished writer; and the same author also says: "Tell us the Mortality Table upon which an Assurance office is based, and it is equally possible—always assuming the existence of sound management—to predict its financial position and relative advantages."

A mortality table is made by observing the operations of the Law of Mortality as shown by the number of deaths at all the different ages in a province, kingdom, country or among insured lives, and then collating, analyzing and adjusting the results so obtained. The process of adjustment or graduation is upon the same principle that astronomers "*reduce*," as it has been termed, their observations to some common event or epoch. It is getting rid of a periodical cause of fluctuation and presenting a result not as it was observed, but as it would have been observed had that cause of fluctuation had no existence. Mr. Walford illustrates it substantially as follows:

Between the ages of fifteen and twenty-five, and even up to later ages, the mortality is kept down in large towns by the influx of healthy people from the country. Thus, in the city of London, the annual mortality amongst young women between the ages named, is only *six per one thousand*; while in the surrounding counties it is *seven to eight per one thousand*, and amongst young men in London, at the like ages, it is *eight per one thousand*. The solution is found in the fact that healthy young women go from the country into London and other large towns, obtain situations, and, if taken sick, go back into the country to die. The effect is to make the larger towns look more healthy than the country, at these ages. Mortality tables constructed upon extensive data from town and country life would not be materially affected by such fluctuations; but those based upon town observations, *only*, are certain to be more or less so, unless subjected to the processes of adjustment and graduation named. The mortality tables almost exclusively used in the United States are:

1. The Actuaries', or Combined Experience Table.—This is based upon the recorded experience of seventeen English Life Companies. It was deduced from 83,905 insured lives under the superintendence of a committee of distinguished actu-

aries appointed for that purpose, on the 19th day of March, 1838. The table was first published by Actuary Jenkin Jones in 1843.

2. The American Experience Table.—This table was constructed by the late Sheppard Homans, Actuary of The Mutual Life Insurance Company of New York, from 1856 to 1871; author of "The Contribution System of Dividends." The table is mainly based on results obtained among insured lives in America, but all the standard European tables were used in the processes of adjustment and graduation.

CHAPTER II.

ACTUARY.—ASSETS,—BROKERAGE.—COMMISSIONS.—STOCK COMPANIES.—MUTUAL COMPANIES.—MIXED COMPANIES.—CONTRIBUTION SYSTEM OF DIVIDENDS.—CASH DIVIDENDS.—REVERSIONARY DIVIDENDS, OR ADDITIONS.—EXPECTATION OF LIFE.—FORFEITURE.—LAPSE.—LOADING.—LOSS.—MORTALITY.

Accumulation.—When used in the "LEVEL PREMIUM SYSTEM," it means either "*reserve accumulation*," or "*dividend accumulation.*" For a full explanation of the former, see pages 65 and 66. "*Dividend accumulation*" occurs when a policy holder, instead of using his cash dividends in part payment of premiums, leaves them with the company until some designated future time, when he can draw them out in one sum, together with the interest earned. When used in the "NATURAL PREMIUM SYSTEM," or in the "ASSESSMENT SYSTEM", of Life Insurance, it means a *mortality* fund, gradually increasing from year to year, in excess of what the mortality table indicates as necessary, to be used, however, in payment of death claims, if needed; or, to be drawn out by the insured at some designated future time; or, to be applied in part payment of future premiums or assessments; or, applied in some *other* way designated in the policy or certificate of membership. The accumulation of such a fund is a wise precautionary measure by which the membership are held together, or by which death claims may be paid, that might be suddenly forced upon the company on account of excessive mortality from epidemics, etc., etc.

Actuary.—One who is proficient in that branch of Life Insurance, which is strictly of a scientific and mathematical nature. The **Actuary** of a *company* makes the rates, at all the ages, for $1,000 of insurance on the different kinds of policies issued by that company. These rates, when published in book form, are called the "*rate book*," and, by consulting it one can ascertain the maximum cost, annually, for any amount of insurance desired within the company's limit. The **Actuary** also calculates how much cash dividend his company may safely pay to each policy-holder at the next approaching policy anniversary. When a policy-holder desires to surrender his original policy for a smaller amount of paid-up insurance; or, for cash; or, for

extended insurance; or, in exchange for some other kind of a policy, the Actuary is consulted, and it is he who determines, subject to the approval of the board of management, what shall be done. It is the Actuary who, from time to time —once every year, at least—informs the company how much "reserve accumulation" it must have in hand to meet the requirements of law, etc., etc. A State Actuary, or the Actuary of The Insurance Department of a state, receives his appointment from the department, and his services are employed in this way: When a Life Insurance company desires to do business in a state in which it has not been operating, it makes application to the Insurance Department of that state for admission. If it be the custom of the department to decline to accept the valuation certificate of the company's home state department, it is then required to send to the department a schedule of all its policies in force, giving, in detail, the age of every policy-holder when insured; also, the date, amount and kind of policy. This schedule is given to the Actuary of the department, who is required "to value," as it is called, every policy described therein, according to the Table of Mortality and rate of interest adopted by the state as its standard of valuation. The valuing of a policy consists in ascertaining how much its "reserve accumulation" must be, at a certain date—generally December 31—to comply with the requisitions of law. When every policy is thus valued, the different amounts thus obtained are added together, and the total amount constitutes what is called the "policy liability" of the company; to this are added the other liabilities —admitted, but unpaid death claims, matured endowments unpaid, etc., etc.—and the result shows the "total liability" of the company. Then this total liability is critically compared with the company's "*gross assets.*" If the results prove satisfactory to the department, it issues a license to the company to do business in the state. If at *any* time the Department of Insurance become suspicious that any Life Insurance company doing business in the state is not sound, it can demand another examination as thorough as if the company were applying for admission into the state for the first time. The policies of all *home* companies have to be valued every year by the **State Actuary**. In various other ways the services of a competent actuary are made very useful to the department and beneficial to every policy-holder in the state.

Assets.—All the available funds and property of any kind belonging to a Life Insurance company. These are closely scrutinized by the Insurance Department of every state. Companies admitted to do business are required to report to the department early each year, not only the amount of assets on hand

at the close of the preceding year, but also the minutest details of the same, and these reports must be sworn to by at least two of the company's officers.

Brokerage.—A percentage paid to an agent or solicitor, by a company, on the first year's premiums, *only*, of policies obtained by him, in lieu of future commissions on renewal premiums.

Commissions.—A percentage paid to an agent or solicitor on all premiums of policies obtained by him, for a specified number of years.

Company, Insurance.—There are three kinds of Life Insurance companies: STOCK COMPANIES, MUTUAL COMPANIES, and MIXED COMPANIES.

A STOCK COMPANY has for its basis a capital stock. The stockholders elect a board of directors, and they the officers who conduct the entire business of the company under the direction and supervision of the board. The rates charged for insurance are, nominally, *lower* than in the other companies. Policy-holders would pay less in a stock company than in most mutual or mixed companies, for the first few years; but, as all the margins and profits made in a stock company go to the *stockholders*, there are no dividends to reduce the premiums, so that after having been insured for fifty years, they still have to pay the same premiums as at first, where the policy calls for continuous annual premiums throughout life. But some so-called stock companies are really mutual. They organize on the basis of a nominal capital in order to comply with the law, which, in a number of states, forbids the organization of life insurance companies without capital, or to secure to the stockholders the control of the business, but in every other respect they are mutual companies, giving all the profits of the business, over and above what is necessary to run them, to the policy-holders.

A MUTUAL COMPANY is one that is nominally controlled by the policy-holders, *themselves*. Every policy-holder has the right to vote, in person or by "*próxy*," in the election of a board of directors. Many of the largest and most successful Life Insurance companies on the globe are mutual companies, and their policy-holders have always had the right to vote at the annual elections; but their success and their present proud positions in the insurance world are owing to the fact that, from first to last, their business has been largely controlled by a few men who have proved themselves equal to every emergency that has arisen, and faithful to the sacred trusts confided to them by the proxies of a numerous, intelligent and appreciative membership. The same can be said of other but younger companies that are rapidly coming to the front, and, juniors though they are and must always be, they even now claim

superiority in some things over their seniors. In a strictly mutual company the dividends are paid to its policy-holders, from whatever sources they may arise.

A MIXED COMPANY is one that does business, nominally, on both the stock and the mutual plans. It is neither a purely mutual company, nor a strictly stock company. It is based on a stock capital, and therefore the policy holders have nothing whatever to do with its management, although there are some exceptions to this rule where the payment of a certain amount as premium annually entitles the policy-holder to a vote in the same way as the holder of a share of stock. Policy-holders who insure on the stock plan receive no dividends; those who insure on the mutual plan receive dividends.

Contribution System of Dividends.—This is a system by which the surplus of a company is distributed among its policy-holders, from year to year, or at the end of specified terms, according to the amount that each one of them has contributed to produce it. It was a wonderful discovery, and its authorship is conceded to two eminent American Actuaries, the late Sheppard Homans and D. Parks Fackler, the latter being now a Consulting Actuary for several of the leading Life Insurance companies of the United States and Canada. The merits of this system of distributing surplus is shown by the fact that all the Life companies in the United States—we are not aware of a single exception—have adopted it. Before its discovery a policy-holder that had been insured in a company twenty years received no larger dividend, other things being equal, than did one who had been insured but five years. By this system, the older the policy, the larger the dividend. A policy-holder whose reserve accumulation in the hands of the company is $1,000 receives, from this source, ten times the amount that another would receive whose reserve accumulations were only $100.

Dividend.—For a full explanation of CASH DIVIDENDS, See pages 69-73. *"Reversionary dividends,"* or *"reversionary additions,"* as they are sometimes called, are paid up insurances purchased from year to year by cash dividends. To illustrate: Suppose one is insured on the ordinary Life plan, in a "Level Premium Company," and that his *cash dividend,* at the end of the first year, when he is thirty-five years old, is $38.54. This dividend *could* be used in part payment of the premium, just due; but, instead, he applies it to the purchase of paid up insurance. It would purchase, in some companies, exactly $100 of such insurance, payable when the original policy is payable—*at death.* At the beginning of the next year he starts off with the original policy, on which he is to pay premiums every year as long as he shall live, and he also has a small policy of

$100 upon which he will never have to pay any premiums, and from which he will receive little dividends, probably, every year. Suppose he does the same next year, and that his cash dividend is then $39.31. He is now 36 years old, and although the dividend is a little larger than it was last year, he is one year older, and it will purchase only $100 of paid-up insurance. The rate is higher at 36 than at 35. Suppose, at the end of a policy year, when his nearest age is 55, his cash dividend is $58.74. Because of his increased age, this much larger dividend will purchase only $100 of paid-up insurance. At age 70, it would require a cash dividend of $76.60 to purchase $100 of paid up insurance. These several amounts of paid up insurance, purchased by the cash dividends, are called "*reversionary additions*," or "*reversionary dividends.*"

Expectation of Life.—A term applied to the mean or average duration of the future life of a person, at any age, according to a given table of mortality.

Forfeiture.—The violation of some of the conditions of a policy, which gives a company the legal right to cancel its policy contract with the insured.

Lapse.—See Chapter VII.

Loading.—A percentage added to the "*net premium*" for defraying the expenses of a company and to provide for a possible excess of mortality, as well as other contingencies.

Loss.—A *legal* claim against a company arising from the death of one of its policy-holders. Matured Endowments and policies issued on Accumulative Dividend plans which reach the end of their dividend periods, strictly speaking, are not losses, although they form legal claims against the company.

Mortality.—Having a given number of persons of the *same age* living at the *beginning* of a year, the mortality is the number dying during that year. The *rate* of mortality is the ratio of the number dying, during a year, to the number that were living at the beginning of the *same* year.

CHAPTER III.

POLICY.—SINGLE-PAYMENT LIFE, WITH EXAMPLE.—FIVE-PAYMENT LIFE, WITH EXAMPLE.—TEN-PAYMENT LIFE, WITH EXAMPLES (1) AND (2).—FIFTEEN-PAYMENT LIFE.—TWENTY PAYMENT LIFE.—ORDINARY LIFE, WITH EXAMPLE.—TERM LIFE.—RENEWABLE TERM LIFE.

Policy.—A contract between a Life Insurance company and one of its policy holders, containing the terms and conditions on which the former indemnifies the beneficiary, or beneficiaries, named therein, against *financial* loss in the event of the death of the person insured; or, by which the company agrees to pay a certain sum of money when the insured shall attain a certain age, or survives a certain period. It is not possible here to even name the different kinds of policies issued by the companies doing business in this country. The following are the most common and popular forms:

SINGLE-PAYMENT LIFE.—This is a policy that is payable at the death of the insured, only. All the premiums are paid in one, *single sum*. If issued on the Stock plan, no dividends; if on the Mutual plan, dividends are paid by the company to the insured every year during life. For $1,000 of insurance, at age 40, the Stock rate is, say, $367.70; Mutual rate, say, $430.19.

Example.—Policy No. 28,342; amount, $10,000; date of issue, April 8, 1863; premium, $4,077; age, 38. The annual cash dividends were used to purchase additional insurance. When the policy had been in force *sixteen* years, the "dividend additions" amounted to $6,020. Had he died, at that time, his estate would have received $16,020.95.

FIVE-ANNUAL PAYMENT LIFE.—This policy is payable at the death of the insured only. The premiums are required to be all paid during the first five years. If issued on the Stock plan, no dividends; if on the Mutual plan, dividends are paid to the insured every year during life. For $1,000 of insurance, at the age of 40, the Stock rate is, say $75.87 annually; Mutual rate, say $101.16 per annum, for *five years only*.

Example.—Policy No. 32,247; amount, $10,000; date of issue, June 4, 1864; age, 39; annual premium, for five years only, $953.80; total premiums paid, $4,769. His cash dividends, during the first fourteen years, amounted to $2,257.34. After the first five years they averaged $100 per annum. The cash dividends, during the first eight years, were used to purchase additional insurance. From the eighth to the fifteenth year,

inclusive, he gradually converted the additions from former dividends into cash and used it, together with the accruing cash dividends, in payment of premiums in the same company on another policy, and still had left at the end of 1878, additions amounting to $334. He had thus paid $2,296.23 in premiums on the other policy! This policy can never be duplicated even by the company that issued it, for the reason that interest earnings are much less now than in the period during which these results were achieved.

Ten-Annual Payment Life.—This policy is payable at the death of the insured only. All the premiums are required to be paid during the first ten years. If issued on the Stock Plan, no dividends; if on the Mutual Plan, dividends are paid to the insured, every year, during life. For $1,000 of insurance, at age 40, the Stock rate is, say, $47.43, per annum; the Mutual rate is, say, $59.17, per annum.

Example 1.—Policy No. 17,114; amount, $4,000; date of issue, August 6, 1856; annual premium for ten years, only, $189.92; age, 31.

The record of this policy from 1856 to 1878, inclusive—twenty-three years—is as follows: Total premiums paid during the first ten years, $1,899.20. The cash dividends were all used to purchase additional paid-up insurance. This additional insurance, thus purchased, amounted to $2.990.20 at the end of the twenty-second year! Had the policy then become a claim, by the death of the insured, his estate would have received from the investment $6,990.20. He had paid the company *less than* $1,900. These results can probably never be duplicated, as the period from 1856 to 1878 was an exceptional one for large dividends in all the companies, owing to the high rates of interest received on their reserves.

Example 2.—Policy No. 46,036; amount, $1,000; date of issue, May 22d, 1869; annual premium, for *ten years*, only, $52.72; age, 36. The history of this policy, from 1869 to 1885, inclusive,—seventeen years—,is as follows:

Year.	Annual Premiums.	Annual Dividends	Net Annual Payments.
1869	$52.72	$00.00	$52.72
1870	52.72	00.00	52.72
1871	52.72	4.24	48.48
1872	52.72	6.49	46.23
1873	52.72	8.91	43.81
1874	52.72	12.05	40.67
1875	52.72	14.63	38.09
1876	52.72	17.32	35.40
1877	52.72	19.79	32.93
1878	52.72	22.34	30.38
	$527.20	$105.77	$421.43

Year.	Annual Dividends.	
1879	$20.35	
1880	21.95	
1881	14.08	
1882	10.53	
1883	8.08	
1884	8 16	
1885	8.36	
	$91.51	No more payments are required.

Remark 1.—The company that issued this policy commences paying dividends at the end of the second policy year, when the third annual premium is paid ; so that, in the above policy, only eight dividends were available in payment of the *ten* premiums. These eight dividends amount to $105.77, and had they been equally distributed and used in paying the ten premiums instead of eight, the net gross amount paid would have been $421.48, as shown above. Thus it is seen that the eight dividends, *used as they were,* were equivalent to a *twenty per cent. reduction of premium,* from first to last.

Remark 2.—Since 1878 this policy was a source of cash income, dividends to the amount of $91.51 having been paid the insured. The dividend of 1885 lacked only seven cents of being two per cent. of the entire cost of the policy.

Remark 3.—The cost of such a policy in a Stock Company, at the non-participating rate of premium, would have been $474.30, or thereabouts, *and no dividends!*

FIFTEEN-ANNUAL PAYMENT LIFE.—This policy is made payable only on the death of the insured. All the premiums must be paid during the *first fifteen years.* If issued on the Stock plan, no dividends ; if on the Mutual plan, cash dividends during life. For $1,000 of insurance, at age 40, the Stock rate is, say, $35.05 per annum ; the Mutual rate is, say, $45.29.

TWENTY-ANNUAL PAYMENT LIFE.—This policy is made payable only on the death of the insured. All the premiums must be paid during the *first twenty* years. If issued on the Stock plan, no dividends ; if on the Mutual plan, cash dividends during life. For $1,000 of insurance, at age 40, the Stock rate is, say, $30.10 ; the Mutual rate is, say, $38.65.

ORDINARY LIFE.—This policy is made payable only on the death of the insured. Premiums must be paid during life. If issued on the Stock plan, no dividends ; if on the Mutual plan, cash dividends are paid every year—after the first or second—so long as the policy remains in force. For $1,000 of insurance, at the age of 40, the Stock rate is. say, $24.35 ; the Mutual rate is, say, $30.84. The rates are lower at younger, and higher at older, ages, as is the case in all other forms of policy contract.

Example.—Policy No. 55,904; amount, $2,000; date, 1868; annual premium, $92.00; age, 50. The insured paid fifteen premiums amounting to $1,380, which, less dividends of $401.32 and premium loan of $288.68 (canceled), made a net payment or cost of $690.00, exclusive of interest. He did not pay the premium due in December, 1883; but instead of taking a paid-up policy for $563.00, he allowed his insurance to be extended for 4 years and 117 days, making in all 19 years and 117 days' insurance, at an average yearly cost of $17.85 per thousand. The party insured died in August, 1885, more than one year after the lapse of the policy, which, however, was promptly paid in full by the company.

TERM-LIFE.—This policy is made payable only on the death of the insured *within the term designated* in the contract. The term may be for one, ten or twenty years. The policy contract may provide for renewal, at the expiration of the original term, on re-examination of the insured, and at advanced rate of premium, or not. This depends upon the practice of the company issuing it. A Term Life Policy is generally understood to be insurance for 10 to 20 years, with uniform annual premiums. No dividends; no paid-up insurance; no cash surrender value, and no insurance one minute after the designated term has ended.

RENEWABLE TERM-LIFE.—Some companies issue a Renewable Term Life policy, as follows: Length of term, ten years, Uniform annual, semi-annual or quarterly premiums are required to be paid during the term. The policy contract is renewable after each term of ten years, at advanced rate, without medical examination, and the accumulated dividends of the last preceding ten years, if any, are applied to a uniform reduction of the next ten years' premiums. Definite provisions are made for paid up or cash surrender value, if desired, after the first three years. The following are specimen annual rates for $1,000 of insurance: At age 20, $12.20; at 25, $13.90; at 30, $16.10; at 35, $18.98; at 40, $22.81; at 45, $28.11; at 50, $35.28; at 55, $44.90 and at 60, $58.00. The rates at intermediate ages are proportional.

Several companies issue a Yearly Renewable Policy. For $1,000 of insurance, at age 40, the premium the *first* year is $14.69; the second year, $15.01; the third year, $15.38; the fourth year, $15.78 and so on, gradually increasing from year to year, as the insured becomes older. No dividends, no surrender value in cash or paid-up insurance.

CHAPTER IV.

ENDOWMENT INSURANCE—QUESTIONS ASKED AND ANSWERED.—ASSUMED EXAMPLES.—ACTUAL EXAMPLES.

ENDOWMENT INSURANCE POLICIES.—These are issued in two general forms—(1), **Ordinary Endowments**; (2), **Limited Payment Endowments.** In an Ordinary Endowment, the policy is made payable to the insured in ten, fifteen, twenty, twenty-five, thirty or thirty-five years after the date thereof, or on attaining a specified age (usually a multiple of five, as 50, 55, 60, etc.), provided he be then living to receive the money; or, to his estate, or some beneficiary named, at the death of the insured, should it sooner occur. Premiums must be paid every year, less the dividends, if any, during the entire endowment period selected.

For a Limited Payment Endowment the conditions of the contract are precisely the same, *except* the premiums must all be paid in a less time than that named as the Endowment period. To illustrate: A twenty-year Endowment may be paid for in ten or fifteen, or even *five* years; or, a thirty-five year Endowment may be paid for in thirty, twenty-five, twenty, fifteen, ten or five years; or, any of these may be paid for in one single premium.

As these endowments, *in our best companies*, have proved to be compound interest investments combined with very cheap insurance—the insurance in some cases costing nothing at all—we have endeavored to make prominent these excellent characteristics in the following questions and answers:

What is Endowment Insurance?

It is Life Insurance for a limited time, usually ten, fifteen, twenty, twenty five, thirty or thirty-five years.

It is something like **Term Insurance**, is it not?

Yes, but in some respects radically different. In **Term Insurance** the policy is not paid unless death occurs during the term.

Isn't the policy paid, in **Endowment Insurance**, if death occurs during the term?

Yes, or it is paid to the party insured, if living, at the end of the term, which is not the case in **Term Insurance.**

Then, in **Endowment Insurance**, one does not have "to die to win," as the saying is?

That's it exactly. In **Ordinary Life Insurance**, provided,

always, that the conditions of the contract are complied with, the policy becomes a claim whenever death occurs. In **Term Insurance**, death must occur during the prescribed term or there is no claim, while in **Endowment Insurance**, the policy is paid at death, during the term; or, to the insured, if living, at the end of the term.

What is the cost of an Endowment, in comparison with other forms of Life Insurance?

It is considerably higher.

Why is it higher?

Because **Endowment Insurance** is **Term Insurance** combined with a compound interest investment. To illustrate: We assume that you are thirty-five years old, that you are insured under a twenty-year Endowment Contract, for $10,000—annual payment, say, $485.80. By one of the conditions of the contract, **you agree to pay $485.80,** every year, for twenty years, if you live; but, if you die at any time during the twenty years, no further payments are required after date of death. **The Company agrees to pay you $10,000** if living to receive it at the end of the twenty years; or, to **pay your legal representatives $10,000** soon after your death, if it occur within the twenty years.

Referring to Table No. 12, we see that $256.50 per year, at six per cent. compound interest, will amount to exactly $10,000 in twenty years. You understand, therefore, that if you live until the maturity of the Endowment, and receive the $10,000 from the company, you will have made an investment of $256.50 per year and actually realized six per cent. compound interest on the money thus invested, for the time it was with the company. When the company contracted to pay the $10,000 at the time and under the conditions specified in the policy, it guaranteed, absolutely, just such an investment to the extent of $256.50 per year. Nor was the guaranty alone conditioned upon your living and paying the premiums to the end of the twenty years; but, in the event of your death at any date during the twenty years, all the conditions of the contract having been fulfilled by you, the guaranty was that as much money should be paid to your representatives as you would have realized had you lived to loan out $256.50 every year for twenty years, at six per cent. compound interest.

This $256.50 of the Endowment Premium under consideration, is what we call the **investment element.** This amount, annually—or a larger sum, at a less rate of interest—must accumulate with the company at six per cent. compound interest, in order that the company may meet its obligations on the contract when it shall have matured.

But you are paying the Company *more* than $256.50 per year, and this excess is the cost of insurance. We assume that you are

insured in a dividend paying company, and that you are using the dividends, from year to year, in reduction of the annual payment. Our better class of life companies have been paying on this kind of insurance, the last 20 years, a dividend of from 25 to 40 per cent. per annum, as an *average* for the whole time. Suppose, at the end of the twenty years, your dividends have averaged 33⅓ per cent. of the annual premium; we then have the following results:

Twenty-Year Endowment at Age 35:

Gross annual premium for $10,000	$485 80
Less the assumed average annual dividend	161 93
Net annual payment	$323 87
The **investment element** returned with six per cent. compound interest, end of twenty years, in the $10,000 paid by Company	256 50
Annual cost	$67 37

At ages thirty, twenty-five, or twenty, with the same assumptions as above, the results would be as follows:

Twenty-Year Endowment at Age 30:

Gross annual premium for $10,000	$471 10
Less the assumed average annual dividend	157 03
Net annual payment	$314 07
The **investment element** returned, &c	256 50
Annual cost	$57 57

Twenty-Year Endowment at Age 25:

Gross annual premium for $10,000	$460 70
Less the assumed average annual dividend	153 57
Net annual payment	$307 13
The **investment element** returned, &c	256 50
Annual cost	$50 63

Twenty-Year Endowment at Age 20:

Gross annual premium for $10,000	$452 90
Less the assumed average annual dividend	150 97
Net annual payment	$301 93
The **investment element** returned, &c	256 50
Annual cost	$45 43

Equally satisfactory results can be shown in shorter or longer endowments. Table No. 12 gives the investment elements at certain rates of interest. In a ten-year endowment, for example, the annual premium for $10,000 at age 35, is, say, $1,025.10. De-

duct from this the average dividend of the company, and from this result the investment element, $715.70, and the balance shows the cost of insurance; and, similarly, with endowments running fifteen, twenty-five, thirty or thirty-five years. If the rate of interest assumed in our illustrations—6 per cent.—seems too high, use the investment elements at a lower rate, as shown in the table.

You have not failed to notice that, while the **Investment Element** in the foregoing examples is the same, the cost of insurance varies; it is $45.43 per year, for the youngest age, and $67.37 per year, for the oldest. The difference in age does not affect the **Investment Element**, provided the amount and kind of Endowment are the same. But the cost of insurance is greater at the older ages. By referring to Table No. 18, you will see why. At age 25, less than seventeen out of one hundred die in twenty years; while at age 35, the death rate for the same time is twenty one.

A little further on will be found some examples of Matured Endowments. These should be carefully examined. Before you do this, however, we desire to make one or two points very clear. If successful in this the subject of endowments will be freed from many vexatious complications. You will now turn to Table No. 12. Until you understand this table, you cannot comprehend our explanation of endowments. With the table before you, look for 16 in the year column, to the right hand of which, in the column headed "*six per cent.*, you will find $36.75. This is the annual investment, which, if compounded annually at six per cent. interest, will amount to exactly $1,000 in *sixteen* years. In the same six per cent. column, at the right hand of 20, may be found $25.65. This is the annual investment, which, if compounded annually at six per cent. interest, will amount to $1,000 in *twenty* years. If you would multiply the result, you must multiply the annual investment. Ten times either of the above annual investments will produce ten times $1,000, or $10,000. In a similar manner, by this table, you can tell at a glance the required annual investment, which, if compounded annually at a certain rate of interest, will amount to $1,000, or any multiple of $1,000, in a given number of years not exceeding 50.

At age 40, an **Ordinary 20-Year Endowment** Policy, for $10,000, requires the payment of twenty annual premiums of $508.70, each, the rate varying a little in different companies. For convenience of illustration we divide this premium into two parts, as follows:

1.	**The Investment Element**.....	$256 50
2.	**The Insurance Element**.....	252 20
	Gross premium.....	508 70

In a policy like the above, every company agrees to do one of

two things, provided, always, that the insured fulfill his part of the policy contract, viz. (1), it agrees to pay to the *insured* $10,000 at the end of twenty years, provided he shall then be living to receive it; or, (2), it agrees to pay to *somebody else* $10,000, provided the insured die at any time *during* the twenty years. Let it be assumed that such a policy has been issued; that the insured has lived the twenty years, and that he has received the $10,000 as stipulated in the contract. By again consulting Table No. 12, it will be seen that when the company paid the $10,000 to the insured, it simply returned $256.50 of every one of the twenty annual premiums paid, together with six per cent. compound interest on the same, for the entire time the money was in its hands!! It is a **six per cent. compound interest investment**, so far as $256.50 of the gross premium is concerned. And this was guaranteed by the company from the start, because it required precisely such an investment to produce the $10,000 which the company agreed to pay. Not only this, but had the insured *died* at *any* time after the payment of the first annual premium, and within the endowment period, the company agreed that it would pay to *somebody* as much as would be produced by such an investment. Living until the end of the twenty years. or dying during the twenty years, the insured was guaranteed, in the policy contract, the six per cent. compound interest investment described! We have now disposed of the **investment** element of the premium; but what has been done with the **insurance** element, $252.20? If this policy were issued by one of our best **mutual companies**, the average annual cash dividend, during the twenty years, probably equaled one-third of the gross premium. The gross premium is $508.70, and one-third of it is $169.57, which has been used in reducing the **insurance** element. Taking $169.57 from $252.20, leaves a balance of $82.63, the average annual cost of the insurance. **A splendid investment! Very cheap insurance.** This is an assumed case, but you will see that the *assumed* are not as good as the *actual*, results in the following examples of **matured endowments.**

Example 1.—Policy No. 6,014; amount, $8,000; date of policy, July, 1867; kind of policy, 16-year endowment requiring sixteen annual payments of $480.96, each; age of the party insured, 39 years.

He paid sixteen premiums amounting to.....	$7,695 36
Less the dividends.....	2,043 07
Total net payments in sixteen years.....	5,652 29
Average net annual payment.....	353 27
The annual investment which, if compounded annually, at six per cent. interest, will amount to $8,000 in sixteen years.....	294 00
Net annual cost of the insurance.....	59 27

This endowment matured and was paid July 1, 1883. **The investment** was $294.00 per year for sixteen years. He realized six per cent. compound interest on it, the principal and interest amounting to $8,000.

Example 2.—Policy No. 52,988; amount, $5,000; date of Policy, March 5, 1870; kind of Policy, Ten-Year Endowment requiring ten annual payments of $529.75, each; age of the party insured, 39 years.

He paid ten premiums, amounting to	$5,297 50
Less the dividends	1,593 35
Total net payments in ten years	3,704 15
Average net annual payment	370 42
The annual investment, which, if compounded annually, at six per cent. interest, will amount to $5,000 in ten years	357 85
Net annual cost of the insurance	12 57

This endowment matured and was paid March 5, 1880. **The investment** was $357.85 per annum for ten years. He realized six per cent. compound interest on it, the principal and interest amounting to $5.000.

Example 3.—Policy No. 37,589; amount, $4,000; date of policy, March 26, 1866; kind of policy, 15-year endowment requiring fifteen annual payments of $302.12 each; age of the party insured, 40 years.

He paid fifteen premiums, amounting to	$4,531 80
Less the dividends	1,656 55
Total net payments in fifteen years	2,875 25
Average net annual payment	191 68
The annual investment, which, if compounded annually, at six per cent. interest, will amount to $4,000 in fifteen years	162 12
Net annual cost of the insurance	29 56

This endowment matured and was paid March 26, 1881. **The investment** was $162.12 per annum, for fifteen years. He realized six per cent. compound interest on it, the principal and interest amounting to $4,000.

Example 4.—Policy No. 5,848; amount, $6,000; date of policy, December 26, 1865; kind of policy, 18-year Endowment requiring eighteen annual payments of $352.32, each; age of the party insured, 37 years.

He paid eighteen premiums, amounting to....	$6,341 76
Less the dividends.....	2,527 18
Total net payments in eighteen years.....	3,814 58
Average net annual payment.....	211 92
The annual investment, which, if compounded annually, at six per cent. interest, will amount to $6,000 in eighteen years.....	183 18
Net annual cost of the insurance.	28 74

This endowment matured and was paid December 26, 1883. **The investment** was $183.18, per annum, for eighteen years. He realized six per cent. compound interest on it, the principal and interest amounting to $6,000.

Example 5.—Policy No. 2,541; amount, $1,000; date of policy, November 13, 1862; kind of policy, 20-year Endowment requiring twenty annual payments of $48.49, each; age of the party insured, 40 years.

He paid twenty premiums amounting to.....	$969 80
Less the dividends.....	358 93
Total net payments in twenty years.....	610 87
Average net annual payment.....	30 54
The annual investment, which, if compounded annually, at six per cent. interest, will amount to $1,000 in twenty years.	25 65
Net annual cost of the insurance..... ..	4 89

This endowment matured and was paid November 13, 1882. **The investment** was $25.65, per annum, for twenty years. He realized six per cent compound interest on it, the principal and interest amounting to $1,000.

In the *foregoing* examples, all the cash dividends were used in the reduction of annual premiums. In the *following* examples the dividends were used in the purchase, from year to year, of additions to the policies, payable with the policies.

Example 6.—Policy No. 30,777; amount, $1,000; date of policy, February 1, 1868; kind of policy, 18-year Endowment, requiring ten annual payments of $85 50, each; age of the party insured, 22 years.

Total amount of policy and additions paid to the insured, by the company, February 1, 1881,	$1,282 78
Cash dividend paid him February 1, 1881.. ...	34 97
Cash dividend paid him February 1, 1882.....	26 15
	$1,343 90

His ten premiums improved at 5⅜ per cent. compound interest would have amounted at date of settlement to.....$1,349 38

And he received in addition life insurance for thirteen years.

Example 7.—Policy No. 45,352; amount, $1,000; date of policy, April 28, 1869; kind of policy, 10-year Endowment requiring ten annual payments of $96.41 each; age of the party insured, 35 years.

Total amount of policy and additions paid to the insured, by the company, April 28, 1879, $1,218 88
Cash dividend paid him April 28, 1880..... 42 86

$1,261 74

His ten premiums improved at 4⅞ per cent. compound interest, for the time, would amount to..... .... $1,264 36

And he received in addition life insurance for ten years.

If the National Banks were to advertise that, upon depositing with them $256.50 every year, for twenty years, at the end of the 20 years the deposits would be returned, with six per cent. compound interest, amounting to **$10,000 for every depositor**, and if a small additional sum were deposited with each $256.50, they would pay, in the event of the death of a depositor, before the expiration of the 20 years, the whole amount of $10,000, sixty or ninety days after date of death, **what a stampede there would be to all our National Banks**; and yet, varying the figures to correspond with the different ages of persons, and classes of policies, this is substantially what all the **better class of life companies are doing** every day in the year and every hour in the day, in offering these endowments to business and professional men and capitalists.

Semi-Endowment Policies.—By this form of insurance the face value of the policy is payable if the insured die within a certain number of years - usually ten, fifteen or twenty—but if alive at the end of that time, then only one-half of the amount, with accumulations, if any, will be paid to the owner of the policy.

CHAPTER V.

TONTINE INSURANCE.—SEMI-TONTINE INSURANCE.—EMERY MCCLINTOCK'S DESCRIPTION OF THEM.—SENATE RESOLUTION NO. 100, OF THE OHIO LEGISLATURE.—APPOINTMENT OF A COMMITTEE OF INVESTIGATION.—MEMBERS OF THE COMMITTEE.—THEIR REPORT ON TONTINES AND SEMI-TONTINES.—EXTRACTS FROM SWORN TESTIMONY.—ACCUMULATIVE DIVIDEND.—DISTRIBUTION.—BONUS POLICIES, ETC.

Tontine and Semi-Tontine Policies.—The first tontine policies were issued over thirty years ago, and provided for absolute forfeiture. Subsequently the principle was modified in the Semi-Tontine form, by the introduction of paid-up values, after three years. Present contracts, as hereinafter explained, contain only the dividend forfeiture feature of the original tontine. The following explanation of the Tontine and Semi-Tontine forms of policies was written some years ago by Emery McClintock, now Actuary of the Mutual Life Insurance Company of New York, and is so clearly stated that we gladly insert it for the benefit of our readers:

Tontine Policies are issued on any usual form, the same as ordinary policies, such as ordinary life, limited payment life, or endowment policies. They are issued at the usual rates of premium, and the only difference between such policies and ordinary policies lies in certain peculiar stipulations.

The first stipulation is as follows:

"No dividend shall be allowed or paid upon this policy until the person whose life is insured thereby shall survive the completion of its tontine dividend period, and unless this policy shall then be in force."

The period referred to is either ten, fifteen, or twenty years, according to the choice made by the policy holder in his original application. The effect of this stipulation is that each premium must be paid in full in cash, during the tontine period, without being reduced by dividends.

The second stipulation is:

"Previous to the completion of its tontine dividend period, this policy shall have no surrender value in a paid-up policy or otherwise.

The effect of the stipulations above quoted is to produce savings to the Company, first, in not paying out dividends, and sec-

ondly, in not issuing paid-up policies in case of lapse. The value of such savings, with their accumulations, is credited to the tontine policies which complete their respective periods.

Semi-tontine Policies form a separate variety, being like tontine policies as regards withholding dividends, but enjoying the same privileges as ordinary policies in case of lapse, as regards paid-up insurance.

How the Surplus is Ascertained.—An account is kept by the Company from year to year of the special savings derived, as above explained, from tontine policies; and a separate account is kept for semi-tontine policies. To keep in view the equitable rights of each tontine and semi-tontine policy, a provisional account or memorandum of its contributions to the undivided surplus is kept, including its share of special tontine profits, adding interest from year to year at the current rate used in the ordinary dividend calculations. The memorandum thus kept of each policy is subject to future rectification, and is not in the nature of a deposit account, nor does it create any liability, technically speaking, different from the usual duty of every company to distribute in due time its undivided surplus on equitable principles. The sum of all these memorandum accounts shows the total tontine surplus of the Company. The accounts for each calendar year cannot be made up until sixty days after December 31st, owing to the conditional right possessed by the holders of lapsed tontine policies to restore them within that time. By the end of March in each year, the tontine accounts of the previous year can be completed. Any member, who has been insured three years, who wishes to learn the present condition of the memorandum account kept in his own case, can do so by addressing the Company. A fuller description of the method of keeping the tontine accounts will be supplied to any member on request.

What May Be Done With the Surplus.—The holder of a tontine or semi-tontine policy may, at the end of his tontine period, presuming that he wishes to keep his policy in force, employ the accumulated surplus which may then be at his disposal in one of three ways:

1st. He can withdraw it in cash.

2d. He can employ its value in reducing the amount of the future annual premium payable. If his policy is an ordinary life policy, this is equivalent to purchasing an annuity for life equal to the amount by which the annual premium is reduced. The annuity is calculated for a larger annual amount than the mere interest on the money, but on the understanding that the Company is in no case to refund any part of it, except as stated, towards payment of premiums. Such an annuity will possess at all times an equitable value, and it is provided that in any year in which the premium so reduced is not paid in cash, the value of the annuity shall be drawn upon towards meeting it, so as to keep the

policy in force. (Of course, the effect of this would be to make the subsequent premiums each proportionately larger.)

3d. He can, on furnishing satisfactory proof of good health, purchase with the surplus a non-forfeitable participating paid-up addition to his policy.

Endowments maturing at the end of the tontine period cannot be continued in force, but are simply paid off when due, with accumulated surplus.

OPTION OF SURRENDER AT END OF PERIOD.—If, at the end of the tontine period, the insured prefers to discontinue his policy, he can surrender it, either for cash or for paid-up insurance, according to his option. (If the paid-up policy exceeds the original amount, proof of good health will be required.) If he takes the cash, the Company pays him not only the accumulated surplus, but also the entire reserve held on the policy, arising out of his past payments. The amount of reserve which will be held and paid is inserted in the policy, but no stipulation is possible, of course, concerning the amount of the surplus which is to accumulate, nor does the Company undertake to make in advance any prediction concerning its probable amount.

This option of surrender, which gives the insured the benefit of every dollar in the Company's hands in any way pertaining to his policy, in case he wishes to discontinue, forms the most valuable feature of the tontine and semi-tontine plans of life insurance. On no other system is so sweeping a privilege obtainable. The more this point is reflected upon, the greater the advantage appears which it confers. It is to be exercised many years in the future, and such far distant subjects usually attract little thought, but on each such policy the time will come when this privilege, inserted at the beginning in the contract, will be found of the utmost importance. No one can now foretell his situation twenty years hence. He may need insurance then more than ever, or he may have no use for it at all. With this privilege, he finds himself on the one hand just as well off as if he had originally taken the policy for a longer term, and on the other hand, as if he had chosen an endowment maturing at the time. The tontine or semi-tontine policy combines the advantages of the life policy and the endowment, being adapted at all points to the contingencies of the future.

THE CHEAPEST FORM OF INSURANCE.—Where a tontine or semi-tontine policy is surrendered at the end of the period and the cash value taken, and the holder compares his payments with the sum returned to him, whatever the latter may be, he finds the net cost much less than he would have had to pay for the same insurance in the same company on any other plan. This is obvious on the surface; for he receives on surrender all the surplus, with interest, which would have been paid as dividends on the policy had it not been on the tontine plan, and also his share of

the surplus, with interest, which would have been paid on the policies of members who have died or discontinued.

Tontine insurance, more than any other system ever devised, EQUALIZES the benefits of life insurance. The heirs of those who die early get a large return in any event, even without dividends; while those who pay the longest, and have the premium paying burden of the whole period, receive all the dividends.

Since the results of tontine policies are more advantageous pecuniarily than on any other class of policies in the same company, the only question remaining for those who are satisfied of the benefits of the plan is, to choose that company which will afford him the best return for his money.

During the years immediately following the introduction of the tontine system, life insurance in the United States passed through a highly crucial period. The panic of 1873, caused by the inflation of values following on the close of the Civil War, was most disastrous to life insurance companies, and more than half of those in existence in 1870 disappeared in the ensuing decade. The surviving companies found great difficulty in securing new business, and with scarcely an exception showed a decrease in insurance in force each year up to the close of 1878. About that time the earliest tontines commenced to mature, and great disappointment began to be expressed at the results, as compared with the estimates. The companies issuing these contracts were not to blame for the outcome. They had prepared estimates based on past experience, submitted them to competent independent actuarial authorities, and in their conservatism had still further reduced them before submitting the figures to the public. But the ten years of panic and distrust of life insurance generally, entirely upset the calculations based on past experience. Interest rates had suffered a material decline, and the very item which had been relied upon to produce the largest source of profit, i. e., lapses, failed to come anywhere near expectations. Experience showed that the fear of absolute forfeiture caused tontine policies to lapse in smaller ratio than other kinds. As the tontine contracts matured in increasing numbers from year to year, the agitation grew, and when the fifteen-year contracts reached the end of their period and repeated the experience of the ten-year policies, legislatures were appealed to and the state of Ohio made an investigation into the subject under the following:

SENATE RESOLUTION NO. 100.

"*Be it resolved*, That the Insurance Commissioner of Ohio is hereby authorized and required, with three members (of this Senate), to be appointed by the President of the Senate, to proceed

at once to the states where such Tontine insurance companies are located and doing business in Ohio, and examine into and report to this Senate, if in session, and if not in session, to the Insurance Department of Ohio, upon the matters relating to such companies, as hereinafter set forth. Said Committee, consisting of said Insurance Commissioner and Senators so appointed, shall have authority to procure such special assistant as shall be deemed advisable by them to carry out the provisions of this resolution."

The above resolution was adopted in the Ohio Senate, April 15, 1885. The matters about which investigation was to be made were as follows:

"*First*—Specially as to the amount of insurance issued to the citizens of Ohio upon the Tontine plan.

"*Second*—As to the amount of such Tontine fund placed to the credit of such policies.

"*Third*—As to the mode of keeping the Tontine accounts with all the policy-holders, and whether such fund, or any part thereof, can be appropriated by the officers of such companies for any purpose other than the purpose originally intended, and whether such fund or any part thereof has been so appropriated or in any manner misapplied; and generally as to the plans and methods of doing business by such companies both at the home office and in Ohio through agencies.

"*Fourth*—As to the credits of such companies upon policies of insurance, to be obtained, for the purpose of establishing a basis for taxation in Ohio."

The committee appointed under the foregoing resolution were as follows: Hon. Henry J. Reinmund, Superintendent of Insurance; Hon. S. P. Wolcott, Senator; Hon. Elmer White, Senator; Hon. A. C. Cable, Senator. Mr. Sheppard Homans, of New York, was appointed Special Assistant to the Committee.

The committee met at the office of the Equitable Life Assurance Society of the United States, at the company's building, 120 Broadway, New York, May 29, 1885, and during their investigations they examined the following companies, designated in their report as

TABLE NO. 1.

Tontine Companies doing business in Ohio.	Designation of Policies.
1.—Ætna, Hartford, Conn.....	Terminable Endowments.
2.—Equitable, New York, N. Y....	Tontine and Semi-Tontine.
3.—Home, Brooklyn, N. Y..... ...	Life-Rate Endowments.
4.—Metropolitan, New York, N. Y.	Reserve Endowments.
5.—Michigan Mutual, Detroit, Mich.	Life-Rate Endowments.
6.—Mutual, New York, N. Y.....	Five-year Distribution.
7.—New York, New York, N. Y....	Tontine and non-forfeiture Tontine.
8.—North-Western Mutual, Milwaukee, Wis.....	Tontine and Semi-Tontine.
9.—Penn Mutual, Phila., Pa.....	Life-Rate Endowment.
10.—Union Mutual, Portland, Me...	Life-Rate Endowment.
11.—United States, New York, N. Y.	Tontine and Semi-Tontine.

"NOTE.—In the Tontine list are included all those companies in which surplus is accumulated for a number of years for the benefit of persistent survivors."

After finishing their labors two reports were made: one by the three senators, dated Columbus, Ohio, August 19, 1885; the other by Henry W. Reinmund, Superintendent of Insurance, and Sheppard Homans, Actuary, assistant to Committee, dated Columbus, Ohio, August 21, 1885. These two reports agree substantially, on all points of vital importance, and, as the latter is more full, in some respects, we give it preference, not having the space for both. It is as follows:

"The undersigned, while coinciding in the main with the views so well expressed by the Ohio Senators in the foregoing report, feel that in addition a resume or digest of the evidence obtained by the committee is desirable, for the information of the public. We bear cheerful testimony to the zeal and impartiality of the Senators, in securing information upon the important subject confided to us by the Legislature. The committee sought, and obtained, wherever practicable, testimony from the opponents as well as from the advocates of Tontine insurance, with the view of separating that which was the result of careful investigation and accurate knowledge, from that which may properly be attributed to mere sentiment, or in some few cases to ignorance or malice. The criticisms made by the opponents of the Tontine system of Life Insurance are mainly as follows:

(1.) That it is a gambling scheme.

(2.) That by harsh penalties in case of forfeiture it tends to deprive families of the protection which they otherwise would have obtained under ordinary policies.

(3.) That the expenses are greater in Tontine companies.

(4.) That the accounts with Tontine policy-holders are imperfectly kept, and that the funds may be misappropriated.

(1.) *As regards the charge that Tontine Insurance is a gambling scheme.*—Gambling, as usually understood, is a scheme by which one gets something for nothing—where no valuable consideration is given by the winner to the loser—where the gain to one is precisely offset by the loss to the other—and where the gain or loss depends not on the will or power of either party, but rather upon mere chance or skill. It is usually condemned as a vice, as subversive of public morals, as wicked and unlawful. Nothing in the evidence obtained by the committee shows or even tends to show, that such grave charges can justly be brought against Tontine Life Insurance. On the contrary, the evidence clearly proves that Tontine Companies derive solid advantages from Tontine contracts, and can safely promise, and in fact do give great and solid benefit to Tontine policy-holders. Statistics abundantly prove, for instance, that when applicants for insurance deliberately elect to pay larger premiums than are absolutely necessary, as Tontine policy-holders do when they elect to forbear the usual yearly dividends, they thereby give evidence, unconsciously perhaps, or by instinct, that they expect to live to enjoy the benefits promised in case of long life—in other words, they give evidence of superior vitality, which is more reliable in determining the value of the risk than the most skillful medical examination. It is clearly proven that the rates of mortality, and also the rates of lapses, or discontinuances, are far less among Tontine than among non-Tontine policy-holders. These constitute the solid advantages of Tontine contracts, and the companies

can give, and in fact do give, in return, ample and compensating advantages in the way of larger dividends or surplus and larger surrender values than can be safely promised or given under ordinary policies.

Tontine and ordinary policies are precisely similar as regards the rates of premium charged, as regards the covenant by the company to pay in full the sum insured, and as regards the non-payment of any surrender value until two or three years have elapsed. They differ only in the following respects: Under a full Tontine contract the right is waived (for valuable consideration) to any surrender value or to any dividend of surplus until the end of the Tontine periods elected. Under a non-forfeiting limited, or semi-Tontine contract, the same right to a surrender value is given that attaches to an ordinary policy, but the right is waived (for valuable consideration) to any dividend of surplus until the end of the Tontine period selected. In other words, these contracts differ only in the amount of the penalty exacted in case of discontinuance and in the periods agreed upon for distributions of surplus among policy-holders.

No Life Insurance Company could, without endangering its safety, permit policy-holders to withdraw *at will*, in cash, their full reserves, or even a large fraction thereof, in case of surrender, because in case of a panic, for instance, resulting from losses in investments or from excessive mortality during an epidemic, the sound lives might withdraw, and only the impaired lives might remain. Without proper penalties to prevent sound lives from withdrawing, Life Insurance would be unsafe, and in fact impossible.

Penalties for the non-performance of contracts are essential to the well being and security of society itself, and are by no means confined to Life Insurance. The company is bound by the strict letter of the policy contract. It cannot refuse to receive a premium, even if the person insured were on the brink of the grave. The policy-holder, on the contrary, may discontinue at will, and usually the performance or non-performance on his part of the conditions of his contract depends upon his own volition. The penalty for discontinuance is greater upon Tontine than it is upon non-Tontine contracts, but the companies claim that in the former case the increased penalty is amply offset by increased benefits. The difference is one of degree, not of kind. The principle is the same in both cases.

A Tontine policy-holder is somewhat like a special partner putting capital into a mercantile business for a term of years. He would not be allowed to withdraw his capital *at will*—that might ruin the business—but at the end of the partnership period he would have the right to withdraw his entire capital and his full share of profits. A Life Insurance Company could not permit a policy-holder to withdraw his full reserve at will, but by reason of the superior quality of Tontine risks, and as a proper compensation therefor, it can safely promise to pay in cash at the end of a long period, or periods named, in advance, the full reserve, in addition to the full share of surplus, in case of surrender. In other words, a Tontine policy-holder has the right, at stated times, to give up his insurance and withdraw his full equity in cash. This great advantage could not safely be promised under ordinary policies.

No complaints have been made by beneficiaries under death claims of forfeiture penalties, and but few from those who have completed their Tontine periods. In cases of early deaths the investments have yielded many hundred, perhaps several thousand per cent. In case of long life and performance of the conditions

of the contract, the investment will yield far more under a Tontine than under an ordinary contract. It is claimed by the advocates of Tontine Insurance, that the benefits as between the long-lived and the shortlived are thus equalized. Only those persons who break their contracts feel aggrieved by the heavy penalties. To such it has been unfortunate, and the losses in many cases must have been heavy. There is no evidence, however, that there was any concealment by the company, or that the contract was not voluntary on the part of the applicant, or that he did not understand fully the penalties for non-performance as well as the benefits which might be expected from the performance of his contract. The applicant was left to select that form of insurance which he considered the best suited to his needs or his pocket. This is just as it should be. If an applicant has not confidence in his ability to keep up his premium payments, ordinary business prudence would impel him to select a semi-Tontine or an ordinary policy. If his object is simply to protect his family at the lowest outlay consistent with security, he may choose renewable term insurance where the investment element is eliminated. But as the senators well observed, he should not be deprived of his right to make his own selection.

It may be added that Tontine Insurance is allowed and practiced in every state in the Union, while in some states—notably in New York—the essential conditions of that form of contract are sanctioned by distinct legislative enactments.

(2).—*As regards the charge that Tontine contracts tend to deprive families of the protection which they otherwise would have obtained under ordinary policies.*—The whole testimony obtained by the committee disproves this charge. The rates of discontinuances, except in the first two or three years when the conditions of the two contracts are similar, are far less among Tontine than among non-Tontine policies, and this is easily accounted for. The penalty in case of lapse, and the reward in case of persistence, are both greater. The definite promise to pay a large sum in cash at the end of the Tontine period, as surplus and guaranteed surrender value, furnishes a substantial collateral, available, if necessary, to borrow money to pay premiums, and would thus enable a Tontine policy-holder to keep up his insurance when an ordinary policy-holder would be compelled to lapse, or to accept, (as a Semi-Tontine policy-holder might also do) a small paid-up insurance. Human nature is so weak that it often neglects duties which are for our own interest or benefit, unless there is a penalty for the non-performance, or a reward for the performance of the same.

(3.).—*As regards the charge that expenses are greater in Tontine Companies.*—Here, again, the evidence and statistical information disprove the charge. The heaviest expenses are generally those incurred at the time the policy is issued, and the greater the volume of new business the greater the apparent expenses. The Tontine Companies issued seventy-four per cent. of the new insurances in 1884, but their expenses are actually smaller than those of the non-Tontine Companies when compared to new business, or to insurances in force when properly classified.

(4.).—*As regards the methods of keeping the accounts, and the proper application of the funds.*—No evidence of wrong doing has been offered to the committee, or that the funds properly belonging to Tontine policy-holders are not managed with fidelity and integrity, and are not held intact for the benefit of the proper beneficiaries. In fact, no charge or complaint of this nature has been made or is known to the committee as having been made

against any company. In conclusion, the evidence obtained by the committee demonstrates that the Tontine system of Life Insurance is lawful; that while the penalties exacted in case of discontinuance are greater than upon ordinary polices, the advantages in case of continuance are also greater. These penalties differ in degree, not in kind, and hence the term gambling is no more applicable to Tontine than to non-Tontine Insurance, and in fact is applicable to neither. The fulfillment of the Tontine contract is encouraged rather than discouraged by these penalties, and the greater benefits given on these contracts.

The companies generally might, with advantage, be more frank and full in statements to policy-holders affecting their interests; or, in other words, might, with advantage, take policy-holders more fully into their confidence. The best way to disarm and dispel adverse criticism, whether proceeding from honest doubt or ignorance, is by the simple logic of facts and figures.

Signed, HENRY J. REINMUND,
Superintendent of Insurance.
SHEPPARD HOMANS.
Actuary, Assistant to Committee.

Columbus August 2, 1885.

Extracts from the Testimony given to the Committee.

Examination of the Equitable Life.

"NEW YORK, May 29, 1885.

MR. JOEL G. VAN CISE, being duly sworn, testified as follows. (Examined by Mr. Homans).

Q. You are one of the actuaries of the Equitable Society?

A. Yes.

Q, For how long a time?

A. I have been connected with the Society for eighteen years this fall. I have been one of the actuaries for about fourteen years.

Q. You have charge of the books and accounts and the calculations on Tontine policies?

A. Yes, sir.

Q. Please read to the committee the printed statement which you have just handed to me.

'As to policies in the Tontine classes, a special account is kept of the income and out go properly belonging to these classes separate from the other business of the Society, so that the amount of the Tontine fund, that is, the share of the whole amount of assets properly belonging to policies in the Tontine classes, can be ascertained at the end of each year. To do this the Tontine fund is credited with all premiums received from Tontine policies, is charged with a due proportion of expenses upon these premiums, receives credit for interest upon its accumulations proportionate to that made on the total funds of the company, and has to pay the losses by death (occurring among the Tontine policies only) and the claims of such policies as reach the end of their

Tontine periods. At the end of each year the total amount of the Tontine fund, and the total amount of reserve necessary to have on hand to secure the original and absolute obligations under the Tontine policies, is calculated and the difference between these amounts is the Tontine surplus, part of which belongs to the policies completing their Tontine periods in the year just entered upon, while a far larger part belongs to the far more numerous policies which will mature in the many succeeding years. As the Tontine policies, after completing their Tontine terms, leave the Tontine class and cannot participate in future divisions of surplus, the opportunity to correct in each future division any error made in previous distributions is taken away, and it is necessary to determine with accuracy the share of the surplus belonging to the outgoing members of the Tontine class. It would have simplified the calculation, perhaps, to have made separate classes for each year of issue of policies with the same Tontine period, so that there would be no mingling of the claims of policies leaving the class with the claims of policies having yet many years to remain in the class. But there was the insuperable objection to this plan, that in small numbers and even in numbers of considerable magnitude, irregularities will arise very troublesome in practice and giving rise to grave suspicions of unfairness, and it is therefore desirable in all life assurance calculations to take advantage of the largest averages attainable. It was therefore decided that all policies with the same length of Tontine period, no matter in what year issued, should be classified together for the purpose of determining the rate of dividends to be allowed, and the plan in detail was this: Rates of interest, of mortality, of lapses, and of management expenses, were assumed, approximating to the actual as nearly as possible. On the basis of these rates a calculation of what would be the surplus on policies taken out at every age and at the end of every year of their existence during the Tontine period was made, and tables of estimated surpluses for all possible contingencies formed. With these tables it is easy at the end of each year to calculate the expected surplus on each Tontine policy in force. The total of these expected surpluses, when compared with the total actual surplus as shown by the valuation of the Tontine policies, gives a ratio of the expected to the actual surplus; and applying this ratio to the estimated surplus by the tables on policies just maturing, we get the actual surplus to which they are entitled. The actual surplus for each policy whose Tontine term is not ended, could of course be calculated in the same way by applying the ratio to the estimated surplus on them as given by the tables; but as these policies cannot draw any surplus till their Tontine period is concluded, this detailed calculation would be useless; and it is sufficient to leave this surplus undisturbed to accumulate for another year when the same work of calculation and of distribution to the policies then maturing has to be repeated.'

Q. I will ask you if that statement is a correct statement of the way in which you have made the estimates, made up the accounts, and credited individuals who are entitled to a credit under Tontine policies?

A. Yes.

Q. Has any departure ever been made in any Tontine policy or Tontine class, from the principles laid down in that printed statement?

A. No, sir.

Q. I would like to ask you if there has ever been any compulsion or persuasion on the part of the officers in the case of any individual policy, or any class of policies, to alter or depart from the principles, as laid down there?

A. No, sir.

Q. And this printed statement, which is copied here, is the correct explanation of the method adopted by the EQUITABLE LIFE ASSURANCE SOCIETY, in dealing with all its Tontine policies?

A. Yes, sir; it is printed for the information of its policy-holders, on the Tontine plan.

Q. By Mr. Homans: Am I correct in this: that in this company the Mortality against Tontine policies only is charged against the Tontine fund, whereas, in the New York Life, for instance, they assume the average Mortality in the Company, and charge the average rate against the Tontine fund?

A. It is true that our Tontine policies and Tontine classes only pay the death losses occurring in those classes. That is true, according to our calculations. What you say in regard to the other Companies—the New York Life Company, for instance—is substantially true. Their dividend calculations are based upon the fact of an average Mortality through the Company, whether it is Tontine or Ordinary Policies. The same is true with the Northwestern.

Q. As I understand it, in the policy-contracts made with the Tontine policy-holders, you covenant to charge only the Mortality arising from members of the Tontine class?

A. I do not know that that is covenanted in the application of the policy, but it has been set forth in all our circulars and publications.

Q. And in making these awards of surplus, you have had strict regard to that peculiarity?

A. Made the exact calculations; charged only for the death losses actually paid.

Q. One point of inquiry that is submitted to this committee, is not only the question as to how the Tontine accounts are kept, but the question is asked whether, in the appropriation of the surplus, any portion of the Tontine fund has been appropriated, or in any manner misapplied, contrary to the agreement?

A. Not one dollar.

Q. And that in all the Tontine accounts you have put to the credit of the fund the total premiums received on Tontine policies, you have charged that fund with the average expenses of the Society on its business, and with the actual death claims paid among the members of the Tontine fund, and have credited the fund with the average rate of interest received by the Society on its investments ?

A. Yes, sir ; no departure has been made from that rule.

From schedule "A" given by the New York Life to the Senate Committee, showing the comparative rate of discontinuance of insurance—lapse—of Tontine and non-Tontine, made up from the company's actual experience for 10 years upon policies issued in 1872 and 1873, we obtain the following interesting and instructive facts :

Amount of Tontine Insurance for which premiums were paid, first year.....	$17,889,000
Amount of non-Tontine Insurance for which premiums were paid, first year.....	$19,748,000
Total Tontine Insurance remaining in force, end of 10th year, (55 per cent. of original amount).....	$9,865,000
Total non-Tontine Insurance remaining in force, end of 10th year, (31 per cent. of original amount).....	$6,064,000

From schedule "B" we gather the following facts with reference to dividends upon Tontine and Non-Tontine policies in Ohio, during a period of 10 years :

EXAMPLE 1.—POLICY NO. 109,314 ; AMOUNT, $3,000 ; DATE, NOV. 7, 1874 ; AGE OF THE INSURED, 31 ; ANNUAL PREMIUM, $70.05 ; **Ordinary Life Tontine.**

(1.) —Premiums received in 10 years.....	$700.50
(2.) —Tontine dividends in 10 years.....	269.79
Per cent. of (2) to (1), 38.	

EXAMPLE 2.—POLICY NO. 118,402 ; AMOUNT, $5,000 ; DATE, FEB. 28, 1876 ; AGE, 31 ; ANNUAL PREMIUM, $116.75 ; **Ordinary Life, Non-Tontine**

(1.)—Premiums received in 10 years.....	$1,167.50
(2.)—Dividends paid in 10 years.....	184.49
(3.)—Dividends paid at 6 % comp. interest....	235.68
Per cent. of (3) to (1), 20.	

EXAMPLE 3.—POLICY NO. 111,458 ; AMOUNT, $1,000 ; DATE, FEB. 23, 1875 ; AGE OF THE INSURED, 40 ; ANNUAL PREMIUM, $31.30 ; **Ordinary Life, Tontine.**

(1.)—Premiums received in 10 years.....	$313.00
(2.)—Tontine dividends in 10 years.....	110.68
Per cent. of (2) to (1), 35.	

EXAMPLE 4.—POLICY No. 117,137 ; AMOUNT, $2,500 ; DATE, DEC. 18, 1875 ; AGE, 40 ; ANNUAL PREMIUM, $78.25 ; **Ordinary Life, Non-Tontine.**

(1.)—Premiums received in 10 years..... ..... $782.50
(2.)—Dividends paid in 10 years..... 113.96
(3.)—Dividends paid at 6 % comp. interest..... 151.73
Per cent. of (3) to (1), 19.

EXAMPLE 5.—POLICY No. 110,368 ; AMOUNT, $3,000 ; DATE DEC. 28, 1874 ; AGE OF THE INSURED, 54 ; ANNUAL PREMIUM, $171.06 ; **Ordinary Life, Tontine.**

(1.) —Premiums received in 10 years.....$1,710.60
(2.) —Tontine dividends in 10 years..... ... 610.00
Per cent. of (2) to (1), 36.

EXAMPLE 6.—Policy No. 116,177 ; amount, $1,000 ; date, Oct 19, 1875 ; age, 54 ; annual premium, $57.02 ; **Ordinary Life, Non-Tontine.**

(1.) —Premiums received in 10 years..... $570.20
(2.) —Dividends paid in 10 years..... 77.02
(3.) —Dividends paid at 6 % comp. interest..... 97.78
Per cent. of (3) to (1), 17.

EXAMPLE 7.—Policy No. 111,776 ; amount, $1,000 ; date, March 10, 1875 ; age of the insured, 47 ; annual premium, $71.25 , **10-Year Life, Tontine.**

(1.)—Premiums received in 10 years..... $712.50
(2.)—Tontine dividends in 10 years..... 193.03
Per cent. of (2) to (1), 27.

EXAMPLE 8.—Policy No. 89,074 ; amount, $2,000 ; date, May 2, 1872 ; age, 46 ; annual premium, $138.52 ; **10-Year Life, Non-Tontine.**

(1.)—Premiums received in 10 years..... $1,385.20
(2.)—Dividends paid in 10 years..... 163.12
(3.)—Dividends paid at 6 % comp. interest..... 201.11
Per cent. of (3) to (1), 15.

EXAMPLE 9.—POLICY No. 107,789 ; AMOUNT, $2,000 ; DATE, AUG. 12, 1874 ; AGE OF THE INSURED, 30 ; ANNUAL PREMIUM, $60.72 ; **20-Year Life, Tontine.**

(1.)—Premiums received in 10 years..... $607.20
(2.)—Tontine Dividends in 10 years..... 219.60
Per cent. of (2) to (1), 36.

EXAMPLE 10.—POLICY 103,563 ; AMOUNT, $3,000 ; DATE, JAN. 14, 1874 ; AGE, 32 ; ANNUAL PREMIUM, $95.22 ; **20-Year Life, Non-Tontine.**

(1.)—Premiums received in 10 years..... $952.20
(2.)—Dividends paid in 10 years..... 135.64
(3.)—Dividends paid at 6 % comp. interest..... 170.68
Per cent. of (3) to (1), 18.

EXAMPLE 11.—Policy No. 91,599 ; amount, $5,000 ; date, Aug. 17, 1872 ; age of the insured, 30 ; annual premium, $242.65; **20-Year Endowment, Tontine.**

(1.)—Premiums received in 10 years..... $2,426.50
(2.)—Tontine dividends in 10 years..... 928.79
Per cent. of (2) to (1), 38.

Example 12.—Policy No. 88,387 ; amount $1,000 ; date, April 5, 1872 ; age, 30 ; annual premium, $48.53 ; **20-Year Endowment, Non-Tontine.**

(1.)—Premiums received in 10 years..... $485.30
(2).—Dividends paid in 10 years..... 67.38
(3).—Dividends paid at 6 % comp. interest..... 84.25
Per cent. of (3) to (1), 17

The preceding examples illustrate the marked difference between dividends on Tontine policies and those on Non-Tontine policies, when issued at about the same age, on the same plan, and having been in force the same number of years. Comparing examples (1) and (2), it will be seen that the Tontine surplus on the former, at the end of 10 years, is 38 per cent. of all the premiums paid, while the dividends paid on the latter, the non-Tontine policy, improved by six per cent. compound interest, amount to only 20 per cent. of the premiums paid during the same number of years! By comparing (3) with (4); (5) with (6); (7) with (8); (9) with (10), and (11) with (12), a corresponding marked difference is observed between the dividends of **Non-Tontine**, and the accumulated surpluses of **Tontine**, policies, in the *same company*. In *another* company, while the per cent. of *difference* between the Tontine and non-Tontine policies might not vary materially from that shown above, yet the dividends themselves might possibly be very much less, or considerably greater, than those shown in these examples, on the same kind of policies issued at the same ages, and having been in force the same number of years. Leaving out the Massachusetts companies, *nearly* all the Life Companies doing business in the United States have incorporated, in one way or another, the Tontine principle, and, if one wants a Tontine policy, he should exercise a reasonable amount of caution and good common sense in the selection of a company. A company that gives large dividends on the ordinary kinds of policies can give much larger on the same kinds when *Tontined;* and, a company that pays but meagre dividends on the usual forms, adopting perhaps

the Tontine system to "*cover up*" its small surpluses, cannot be relied on for large returns of surplus under the Tontine forms of insurance.

Accumulative Dividend—Distribution—Bonus Policies, Etc —With very few exceptions the old forfeiture principle of the Tontine system has now been eliminated. Indeed, the very name itself has disappeared. The modern contract providing for deferred dividends is known by various names, such as Accumulative—Dividend, Distribution or Bonus policies. Instead of providing absolute forfeiture of all interest in the accumulations and surplus earnings of the policy, or allowing only a small paid-up contract in case of lapse, surrender values are allowed at the end of any year after the third, and in some cases after the second. These surrender values are of three kinds, viz., cash terminating the contract absolutely; paid-up insurance payable on the same terms as the original policy, or extended insurance carrying the full amount of the policy for a specified period, varying in length according to the number of years the original has been in force.

The forfeiture of dividends is, therefore, the only feature of the Tontine contract left, the persistent policy-holders sharing in the surplus accumulated on contracts which do not continue to the end of the dividend, distribution or bonus period. The same arguments in favor of this modified form apply, as in the case of the old contracts, for all other things being equal, the dividends paid at the end of a period of, say, ten, fifteen or twenty years, must be greater than the sum of the annual dividends paid by the same company, even after allowing for the compounding of interest on the latter. That such policies best meet the requirements of the public is shown by the fact that the companies not issuing them are now in a very small minority, and recent legislation (in 1900) in Massachusetts recognizes the demand for such contracts by permitting companies of that Commonwealth to defer the payment of dividends for a longer period than the five years to which they have been heretofore limited.

CHAPTER VI.

PREMIUMS.—PREMIUM NOTES.—SURPLUS.—VALUE OF A POLICY.—LIFE INSURANCE FAILURES.—LIFE INSURANCE EXPENSES.

Premiums.—The sums required to keep a policy in force, according to its conditions. In "The Level Premium System" of Life Insurance, every premium is composed of *three elements*, the Reserve Element, the Mortality Element, and the Expense Element. The annual premium on an ORDINARY LIFE POLICY, for $10,000, at the age of 35, is, say, $264.90. This is made up for the first year as follows:

1.	THE RESERVE ELEMENT	$110.39
2.	THE MORTALITY ELEMENT	88.27
3.	THE EXPENSE ELEMENT	66.24
	GROSS PREMIUM	$264.90

See page 65, for a full explanation of each of these elements. The three elements combined make up what is called the *gross premium.* The first *two* elements, combined, amounting to $198.66, make what is called the *net premium;* and similarly with reference to any other premium for any kind of a policy issued under The Level Premium System. It must be borne in mind that as the policy increases in age the reserve element of each annual premium decreases in amount, while the mortality element increases in order to provide for the more numerous deaths which occur with advancing age.

Premium Notes.—Notes given by policy-holders in lieu of a part of the *cash* payment of the premium. These, if not paid or canceled by future dividends, must be deducted from the amount insured in case of death, or at the maturity of an endowment.

Surplus.—The sum left, after providing for the liabilities—present and prospective—of a company.

Value of a Policy—The Reserve.—The *net value* of a policy is the difference between the net single premium for the sum insured at the age of the policy holder, when the policy is valued, and the present value of all future net premiums calculated to be received. The *gross value* of a policy is the difference between the net single premium, as given above, and the present value of all future *gross* premiums to be received on the policy.

Owing to a fixed law governing these reserves, life insurance mathematics enables one familiar with it to tell, not only the *present,* but also the *future,* net value of any kind of a policy. A tabulated statement of the yearly net values, from the present

to any future date, is called an "ABSTRACT OF NET VALUES" for that policy. Some of the advantages of such an abstract are:

1. **It names the amount** of cash held by a company in the "Reserve Accumulation," from year to year, to the credit of a policy, for a term of years.

2. **It indicates** the equitable cash surrender value of a policy, from year to year, for a designated period of time, commencing with *the present.* The cash surrender value is generally from 30 to 95 per cent. of the reserve accumulations.

3. **It indicates** the amount of paid-up insurance that should be given, if desired, in exchange for the original policy, or the term for which the original insurance can be extended without further payment of premium.

4. **It indicates** the amount of *cash loan* that could safely be made on a policy, if assignable, as collateral security.

5. **It is a safe guide** to a correct decision on any proposed changes affecting present insurance.

6. It enables one to closely approximate the loss on a deferred dividend policy, if the required number of premiums be not paid, as specified in the contract.

7. It gives a correct basis for dividends, if any, which can be paid by companies in the hands of Receivers.

8. **Such an Abstract** makes its owner thoroughly intelligent, at all times, with reference to his Insurance. It is protection to the insured; it is protection to his family.

9. **Without one of these Abstracts,** for each policy in force, one possesses property the cash value of which he knows little or nothing. He is annually making cash deposits with no definite information as to the balances in his favor. The *cost of insurance* is the difference between the actual amount of cash premiums paid and the cash surrender value of the reserve accumulations to the credit of the policy. One is supposed to know what he has paid. An Abstract tells him the amount of his reserve accumulations. Nearly all policies issued now contain tables setting forth what the company guarantees in the event of non-payment of premium after two, or, in most cases, three years. Such tables show the cash surrender values and its equivalent in paid-up insurance or the term of extended insurance.

LIFE INSURANCE FAILURES.

In a pamphlet, entitled "**Life Insurance; its history in the United States during the last half century.**" Published by the GLOBE NEWSPAPER COMPANY, Boston, Mass. 1885, is the following:

"In 1860 there were but fifteen Life Insurance Companies doing business in the country, and all but two of these companies are doing business now. In 1865 the number had increased to twenty-five. From this time there was a perfect deluge of additions to the companies. By 1871 there were seventy-two con panies trying to do a business, which might well have been left to the original fifteen. There seemed to be a perfect craze. Each city must have its Life Insurance Company, and one being organized another must become its rival. Men who had failed in everything else thought that because there had never been a failure in Life Insurance it was their field. Men who knew nothing about the business organized companies, bought furniture and books, and set up shop as a Life Insurance Company. The business was tampered with to an extent which had never fallen to the lot of any other business. Of the seventy-two companies in 1871, it is probable that not thirty of these had educated Life Insurance men at their heads. What could one expect as a result of this craze? Could one suppose that it would meet a fate different from that of all other business handled by men who know nothing of it? Let any sensible man answer the questions. Could one have expected these companies to succeed? People do not buy their hats of shoemakers, nor do they buy shoes of tailors. A farmer or a butcher could undoubtedly cut off a leg, but he would be sure to kill his patient, A well educated physician would surely make a failure in trying an intricate law case, and an expert attorney would doubtless be capsized in trying to sail a boat. The trouble, and the sole trouble with the mushroom Life Insurance Companies was that men undertook to do what they did not know how to do, and they failed, just as it was certain that they would fail."

"Taking every organization that ever did any business in Life Insurance, and the record is that seventy-seven companies have been in the business that are not now in the business. (Here followed a list of the companies.) There have been a few other futile attempts to establish a Life Insurance Company, but the foregoing is a list of the companies that came before the public for business, and that did business of any consequence."

"Some of the above-named companies failed outright, some of them reinsured their risks in other companies, which afterwards failed, others of them reinsured their risks in companies which are solvent, and which have carried out all of the original contracts, and some of them did not do any business at all. The following table shows the assets of fifteen of the larger of the companies at the last annual report, before they ceased business. The assets of the other companies are stated with just as much precision, but are placed in one sum:

Knickerbocker, N. Y	$6,033,231
North American, N. Y	5,789,074
Globe, N. Y	3,613,291
Continental, N. Y	6,229,484
Security, N. Y	3,683,186
Life Association, Mo	3,043,538
St. Louis Mutual, Mo	6,195,329
Universal, N. Y	3,542,320
Guardian, N. Y	3,976,976
New Jersey Mutual, N. J	1,808,882
Atlantic Mutual, N. Y	1,252,016
Widows' and Orphans', N. Y	1,599,068
Republic, Ill	2,084,541
World, N. Y	344,258
All other companies	11,498,145
Total	$60,638,339

"It will thus be seen that the total assets of all the companies that have failed in this country, given in the last annual report before they failed, was about $60,000,000. But, as before said, in a number of cases the risks were safely reinsured in other companies. The amount of these reinsurances, at a safe estimate, would reduce the amount to $40,000,000. Then, again, the failures were not absolute. In some cases nearly the whole liability was saved. In others a large portion was saved. It is not probable that over half the amount was really lost. Still, it may be, and probably is, true that $25.000,000 have been lost by those Life Insurance Companies that failed."

"When we look at the enormous business of Life Insurance in this country, and at the great good it has accomplished, the life insurance failures seem very small compared with the failures of banks in the last forty years, or with failures in any other class of business, the amount is small indeed."

The article then goes on to state the amount of losses that these companies paid while doing business. They are given in detail, and amount to $41,208,015. It concludes with the following:

"Compare the amount of money lost by Life Insurance Companies which have failed, and the good accomplished by these very companies in the payment of over $41,000,000 of losses, and give credit where credit is due. Can any other business show as much good accomplished where the business has resulted in failure? But there is another perfectly just way to look at the money lost by failed Life Insurance Companies. It is a large estimate to call the amount $25,000,000. The Life Insurance Companies, as has been shown previously, have assets of about $500,000,000. They have paid dividends of about $250,000,000, and they have paid in purchase of policies before maturity about $150.000,000. If this amount be added to the amount used in expenses of management, we may say that the Life Insurance Companies of this country have handled about $1,500,000,000, and that, in doing so, some inexperienced men, who engaged in the business and failed, lost $25,000,000. Take the business in any way, look at it from all sides, and then make the record, and tell the results.

"Let the record be told as it is. Say it boldly, Between *one* and *two* per cent. of the money handled by the Life Insurance Companies has been lost by bad management. If the wisest men in the world had conducted all of the business, we could not have expected better results. Let any man who is disaffected as to life insurance, because some companies have failed, look at the facts as they are, and he will forever after compliment the business rather than criticise it adversely. The result is in favor of the business. It is complimentary in every way."

In the course of an extended review of life insurance, prepared by John A. McCall, president of the New York Life, and read before the National Convention of Insurance Commissioners in September, 1898, the following remarks were made on the subject of life insurance failures:

The nine years immediately following the first convention must be accounted the most trying period in the history of American life insurance. The number of companies which ceased doing business in New York was forty-six. Only four

reinsured in companies that remained solvent; only ten others paid their liabilities in full. Receivers' reports are incomplete, but a careful examination of such as are accessible show the total loss to policy-holders by failures among American life companies to be about thirty-five million dollars, nearly all of which occurred during this period.

* * * * * *

The loss to solvent companies of business, as well as of prestige, during this period was very great. In 1870 the income of the companies doing business in New York was $105,000,000, in 1879 it was $76,000,000; in 1870 the new business was $588,000,000, in 1879 it was $168,000,000; in 1870 the risks in force were $2,024,000,000, in 1879 they were $1,440,000,000. Notwithstanding the removal of so many competitors from the field the business of the thirty-one solvent companies was less in 1879 than that of the same companies in 1870; their income was two millions less, their risks in force were seventy millions less, and their new business had fallen off over one-half. The total new paid-for business of all the companies in 1879 was nearly thirty-eight million dollars less than has since been written in one year by a single company.

Yet all these losses and failures are but a part—and a small part at that—of the loss and failure which overtook the business interests of the country generally during the same period. The financial panic of 1873 marked the culmination of the over-trading, over-building and over-capitalization which resulted naturally from the inflation of the currency during the civil war. Life insurance had grown more rapidly than any other business of equal magnitude; its failures and losses were proportionately much less. At the end of 1873 the entire capital account of the railroads of the country was about thirty-eight hundred million dollars, and during the next six years roads representing nearly one thousand millions were sold under foreclosure or went into receivers' hands. The assets held by failing life companies amounted to about one-ninth of the total; the assets of defaulting railroad companies represented over one-quarter of the total. About one-fourth of all the savings banks in New York went out of existence during the six years following 1871, with losses amounting to about four and one-half million dollars. The Superintendent of the Banking Department, commenting on these figures, said, if the funds of all savings banks in the State had been invested in United States bonds in 1871 the shrinkage would have been seven million dollars; if in the best railroad securities it would have been over thirty millions; if in the best bank stocks, thirty-five millions, and if in real estate, from forty to fifty millions.

It has been the custom of writers who would exalt life insurance to give scant space to the discussion of the failures and losses of this period, but to my mind there is no period in life insurance history that deserves more careful study, and none that contains more valuable lessons to the life insurance manager. Why did these companies fail? A true and complete answer to that question would put every officer and every trustee of a life company on his guard against like causes and a like catastrophe. As we have already seen, these failures were contemporaneous with many other failures in the business world, and something must unquestionably be

allowed for the great shrinkage in values, as measured by the currency of the country, between 1864 and 1879. But, the companies that survived and increased in strength were obliged to meet the same conditions—how did they escape? A study of the reports of this period shows but very little charged off to profit and loss by the failing companies, but a study of their condition at the time of failure shows a great gulf between actual and assumed value of assets. In many of these companies gross frauds had been practiced for years, and a thorough examination would have exposed them. In others, loans had been made on insufficient security and with evident profit to favored individuals. In some cases loans upon which neither interest nor taxes had been paid for years were carried on the books at their full face value. Such assets, under the inexorable rules of a receivership, melted away like snow beneath a summer sun. Six of the largest failing companies having their domiciles in New York State made the following showing: Real estate owned and bonds and mortgages on real estate, at the companies' last reports, $14,160,057, amount realized from same by receivers $4,449,-984, or about thirty-one and one-half per cent.; all other assets, by companies' last reports, $4,538,196, amount realized by receive s $2,232,424—a little over forty-nine per cent. During the continuance of these receiverships there was received, in addition to the foregoing, as interest and rents on all property, $676,030, and $908,302 was paid out as real estate expenses. Other expenses of these receiverships were $1,678,-172, or a little over twenty-two per cent. of total receipts.

But what brought these companies so near the "ragged edge" of insolvency, according to their own statements and valuations, that their true condition could no longer be concealed? For an answer to this question I have tabulated the most important items of income and expenditure of the largest of these companies, as they appear in the New York reports, from 1864 until the companies ceased doing business in the State. The examination covers seven New York companies with an average of over twelve years of business, and seven other State companies with an average of over six years of business. These fourteen companies absorbed by reinsurance previous to their demise fourteen other companies, and together they represent the bulk of the failures, as regards amount of business and losses incurred, that have taken place among American life insurance companies. As a standard of comparison I have taken the record for ten years, 1865 to 1874, both inclusive, of the twenty-six companies which were in existence during the period, 1864-1879, and which are still solvent and active. The following is a summary of the results: (1) The interest rate of the failing companies was nearly one per cent. (.86) less than that of the solvent companies; (2) expenses of management in the failing companies were nearly seven per cent. more of premium receipts, or about four and one-half dollars more per thousand of insurance in force, than in the solvent companies; (3) death claims paid were nearly three per cent. more of premium receipts, or nearly three dollars per thousand of insurance, higher in the failing companies than in the solvent companies. The higher rate of interest earned by the solvent companies would have given the failing companies nearly

four million dollars more in interest receipts; the lower rate of expenses of management of the solvent companies would have saved the failing companies between twelve and sixteen million dollars;* and the lower death-claim ratio of the solvent companies would have saved the failing companies between four and ten million dollars.*

During the period covered by this review the failing companies paid nearly nineteen million dollars in dividends to policy-holders, but the ratios, both to premiums and to insurance carried one year, were but little more than one-half as large as in the solvent companies. The results attained by considering the question from opposite sides corroborate each other; for example, the additional amount needed by the failing companies to pay as large dividends as were paid by the solvent companies would have been (according as the ratio to insurance or to premiums is used) from fifteen to twenty million dollars; while the saving to the failing companies by ratios of interest, expenses and death claims as favorable as those of the solvent companies, would have been from twenty to twenty-nine million dollars. With the same rates of interest, expenses and death claims as the solvent companies, the failing companies might have paid the same rate of dividends and added from five to nine millions to surplus; the solvent companies, with almost exactly three times as much business, in the period under review, actually added over sixteen millions to surplus.

* * * * * *

It seems clear from this review that these failures resulted from bad management, in the broadest sense of the term. It was extravagant, wasteful, dishonest. It paid too much for services rendered; it did not take proper care of the results obtained. The data upon which it proceeded were not deceptive; no company failed because of an excessive death rate, nor (save in a single case) because it was impossible to realize a rate of interest equal to that upon which its premiums were cast.‡ The assumption which failed was that the loading on the net premiums would equal expenses and losses on investments. Some of the smaller companies were, indeed, honestly managed, and reinsured while solvent; their mistake was in reinsuring in badly managed companies. There were others which might have been saved by more judicious handling on the part of the officers of the law; their mistake was in approaching so near the "dead line" that officers of the law could drag them over it. In no other business is failure so disastrous as in life insurance; in no other is it so unnecessary; in no other is it, therefore, so inexcusable. It is of no use to lay the blame of failure upon the law that makes a net valuation the test of solvency, because this law existed before most of these companies began business. That was one of the conditions of their life, to be prepared for and conform to, as much as any other condition. As it is the province of history to teach us how we may avoid the mistakes of our predecessors, I venture to suggest the following as some of the safeguards suggested by this study:

1. The utmost care in making investments—security to be always the paramount consideration.

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* According as it is calculated on premiums or insurance. ‡ The Universal, which assumed six per cent interest in calculating its premiums

2. The necessity of frequent revaluations of securities, and of their rigid adjustment to changing conditions.

3 The close study of a company's business upon the principles of the "Gain and Loss Exhibit" now required by several insurance departments.

4. The assumption, for purposes of practical administration, of a higher standard of reserve than that by which the company's solvency is tested under the law.

The first of these suggestions may reduce the rate of interest, but it will save the principal; the second will prevent any serious reduction of assets by insurance officials; the third will locate the fault of administration, if there be one; and the fourth will preserve a strip of neutral ground between the path the company has marked out for itself and the line to which it cannot come near with safety.

LIFE INSURANCE EXPENSES.

The following figures with reference to the comparative expenses of Life and Fire Insurance companies are compiled from tables found in the Insurance Year Book, 1900-1, those referring to Railroad corporations, from Poor's Manual, 1899:

Total income of American Life Insurance Companies, from 1895 to 1899 inclusive, five years	$1,551,421,435
Total premium income for the same time.	1,240,528,042
Total expenses for the same time	392,479,353
Ratio of expenses to total income	25.3 per cent.
Ratio of expenses to premium income	31.6 per cent.
Total income of American Fire and Marine Insurance Companies, from 1895 to 1899, inclusive, five years	$529,335,575
Total expenses for the same time	184,352,004
Ratio of expenses to total income	34.8 per cent.
Total income of Foreign Fire and Marine Insurance Companies doing business in the United States from 1895 to 1899, five years	256,230,553
Total expenses for the same time	82,009,451
Ratio of expenses to total income	32 per cent.
Total gross traffic earnings of the Railroad companies of the United States from 1894 to 1898, inclusive, five years	$5,693,646,657
Total net traffic earnings the same time	1,710,215,417
Total expenses for same time	3,983,431,240
Ratio of expenses to gross traffic earnings.	70 per cent.

The **Hon. Elizur Wright**, in 1863, said:

"The proper office expenses of the companies, apart from the use of the press to enlighten the public mind, are usually very moderate compared with those of most other moneyed corporations. To these must be added taxes and legal expenses, indispensable to protect the common fund against the raids of fraud."

Also the following:

"The expenses of management do not ordinarily increase in proportion to the business, but it is in the largest companies that the largest percentage of the premium has either returned to the policy-holders or is accumulated for their benefit."

These statement are doubtless as true to-day as in 1863, as shown by the comparison just made of the expenses of Life Insurance companies with those of Fire and Marine companies and Railroad companies. But, as a safe test of the economy of one life insurance company with that of another, in matters of expense, the comparison of expenses with total or premium income is questioned by some of our best thinkers on the subject.

Mr. Wright said, in 1873:

"When two companies are to be compared in regard to the economy of their working expenses, comparing their respective ratios of expense to either total or premium receipts is about as idle as it would be to count the buttons on the clothing of their respective presidents."

One of the oldest, most conservative, and best managed Life Insurance companies in the United States takes the position that the **ratio of gross insurance expenses to net insurance claims met**, during any year, *is the only clearly intelligible and scientific test of the economy of expenses.* The company illustrates this new test by reference to its own record of business in 1884, as follows:

Gross expenses	$360,170.17
Deduct investment expenses	74,757.00
(1) Gross insurance expenses	285,413.17
Gross death claims	973,693.00
Deduct the part paid by premium reserve	328,217.49
(2) Net death or insurance claim	645,475.51
Exact ratio of (1) to (2)	44.2 per cent.

"An inspection of these figures is sufficient to show the principle involved, which is simply to distinguish INSURANCE from INVESTMENT expenses, so that it may be seen that each branch of business has been conducted with due economy."

"Under ordinary circumstances, INSURANCE EXPENSES approaching the full value of insurance furnished, or amount of

insurance claims paid, should be regarded as extravagant; and INVESTMENT EXPENSES so large as to defeat the realization of a fair rate of interest on investments should also be so regarded."

This new test is further illustrated by the company, as follows:

"This company's ratio of gross expenses to gross income for 1882 was 12.7 per cent., and to the mean amount of its policies in force, 0.57 per cent. The reader will at once perceive that these figures convey no conclusive or practical idea to him, such as he is given when he is informed that the INSURANCE EXPENSES bear a certain proportion to the INSURANCE CLAIMS PAID. Expenses may be incurred by a company amounting in a given year to more than 100 per cent. of the insurance claims paid, or real insurance service rendered by it, in the same year, which, of course, would be highly extravagant, and yet the extravagance might escape detection in a comparison with income, or the amount of policies in force; for the amount of expenses, notwithstanding their extravagance, would still be far below either of these amounts."

In illustration of the unreliability of the ratio of gross expenses to gross receipts or premium income, as a test of the economy of one Life Insurance Company as compared with another, the reader is referred to the official report of the Insurance Commissioner of Massachusetts, Jan. 1, 1874, pages xxxii to xxxvi, inclusive. In the example there cited, by a skillful manipulation of figures, the ratio of expenses to gross receipts was reduced from 14.33, the correct ratio, to 8.76 per cent.; and the ratio of expenses to premium receipts was reduced from 20.16, the correct ratio, to 10.6 per cent.!

Growth of Life Insurance.—In the past two decades there has been a wonderful expansion in life insurance as transacted by American legal reserve companies. At the close of 1879 the companies reporting to the New York Insurance Department showed assets of $411,555,247; an annual income of $77,829,030; payments to policyholders, $57,399,971; new business, $167,865,390, and total insurance in force, $1,439,961,165. Only a few small companies did not report to the Department at that time, and their figures would not materially change the totals. The accompanying table shows the standing of all United States companies at the close of 1889, also at the close of 1899, while additional columns show the increases for the last decade, together with the aggregates for the ten years:

GROWTH OF LIFE INSURANCE.

	1899.	1889.	Increase in 10 Years, (1890-99)	Aggregates for 10 Years. (1890-99.)
Number of companies	69	50	19	----------
Capital stock	$13,325,728	$8,028,150	$5,297,578	----------
INCOME.				
New premiums	57,683,670	33,437,579	24,246,091	$414,470,664
Renewal premiums	227,937,666	103,808,930	124,128,736	1,707,719,680
Received for annuities	6,220,858	2,921,808	3,229,055	39,276,287
Total premium income	201,842,264	140,168,312	151,673,952	2,161,466,631
Dividends, interest, etc	61,039,137	31,471,298	29,567,839	461,967,707
Received for rents	7,450,525	2,566,029	4,884,496	49,232,953
All other receipts	5,036,136	2,037,220	2,998,916	19,116,123
Total int. and other income	73,525,798	36,074,557	37,451,241	530,316,783
Total income	365,368,062	176,242,859	189,125,193	2,691,783,414
EXPENDITURES.				
Paid for death losses	96,219,587	44,866,684	51,352,903	718,359,581
Paid for matured endowments	15,379,675	9,092,172	6,287,503	106,991,404
Annuities paid	3,684,673	1,539,793	2,144,880	25,561,272
Paid for surrendered, lapsed and purchased policies	23,365,735	12,420,282	10,945,453	217,393,829
Dividends to policyholders	21,368,316	14,180,598	7,237,718	165,861,013
Total payments to policyh'rs	159,987,686	82,049,529	77,938,157	1,232,167,099
Dividends to stockholders	926,566	475,760	350,806	7,588,608
Commissions, salaries and traveling expenses of agents	56,234,846	24,165,851	32,068,995	388,718,218
Medical fees, salaries and other charges of employees	11,857,966	5,037,767	6,820,199	83,790,962
All other expenditures	21,389,047	9,176,328	12,212,719	151,758,898
Total expenses of managem't	90,308,485	38,855,705	51,452,780	631,851,686
Total expenditures	250,296,121	120,905,235	129,390,887	1,864,018,785
Excess of income over expen	115,071,941	55,337,624	59,734,306	827,764,629
Total admitted assets	1,595,208 408	714,469,944	880,738,464	----------
Items not admitted	10,664,022	5,412,650	5,251,372	----------
LIABILITIES.				
Reserve (4 per cent)	1,322,485,263	616,308,271	706,181,99[illegible]	----------
Losses and claims not paid	9,169,441	3,386,557	5,782,884	----------
Claims resisted	1,116,922	217,809	899,113	----------
Dividends unpaid	3,211,405	1,110,023	2,101,382	----------
All other liabilities	29,890,912	3,250,002	26,640,910	----------
Total liabilities	1,365,873,943	624,267,662	741,606,281	----------
Surplus to policyholders	229,334,465	90,202,282	139,132,183	----------
POLICY ACCOUNT.				
New business written	1,324,041,326	803,887,518	520,153,808	10,015,642,662
New business not taken	146,550,821	134,561,583	11,289,238	1,542,873,646
New business actually paid for	1,177,490,505	669,025,935	508,864,570	8,472,769,016
Whole life policies in force	4,379,066,158	2304 246,898	2074 819,260	----------
Endowment policies in force	1,460,417,893	754,312,387	706,105,506	----------
All other policies in force	642,039,912	158,777,151	483,262,761	----------
Total insurance in force	6,481,523,963	3217 336,436	3264 187,527	----------
Industrial business written	519,380,207	201,977,843	317,402,364	3,663,463,051
Industrial insurance in force	1,292,756,042	365,841,267	926,914,775	----------

CHAPTER VII.

THE LEVEL PREMIUM SYSTEM.—ITS DISTINGUISHING CHARACTERISTICS.—REQUISITES FOR SOUNDNESS AND PERMANENCY.—ANALYSIS OF A PREMIUM.—THE RESERVE ELEMENT.—THE MORTALITY ELEMENT.—THE EXPENSE ELEMENT.—SOURCES OF DIVIDENDS.

SYSTEMS OF LIFE INSURANCE.

Three systems of Life Insurance are operated in this country under the protection of law. They are The Level Premium System, sometimes called "Old Line," and which includes the companies transacting industrial insurance; The Natural Premium System, which may be, and often is, carried on as incidental to the Level Premium System, and The Assessment System. This latter has passed through many stages since the first edition of this work was issued, one outcome of which has been the so-called Stipulated Premium System, which, while calling for a specified premium in advance, nevertheless retains the right to assess should circumstances warrant such action. Stipulated Premium Insurance is, therefore, more nearly allied with the assessment system than either of the other two, and is treated accordingly in these pages. These are discussed in the following pages in the order named.

1. The Level Premium System.

DISTINGUISHING CHARACTERISTICS:

1. The premium is required to be paid in advance.
2. The contract between the company and the insured is called a "policy."
3. The policy always designates a definite sum to be paid by the company to the beneficiary, or beneficiaries, named therein, subject in some cases to the right of the insured to change the beneficiary.
4. The premium is a "level premium"; that is, it is the same from year to year, during the premium paying period, unless reduced by dividends.

5. The policy-holder is never insured for the full face value of his policy and additions. His insurance is only for a sum equal in amount to the difference of these and their reserves. In other words, the company has at risk only the difference between the face of the policy and the reserve accumulated thereon.

REQUISITES FOR SOUNDNESS AND PERMANENCY.

***a.*—The premium must be based on safe assumptions of future mortality, interest and expenses.**

To illustrate.—Let it be required to make an annual premium, at age 40, for $1,000 of insurance, on the Ordinary Life Plan, basing it on the Actuaries' Table of Mortality and 4 per cent. interest. It is first assumed that, of the 78,653 persons living, at age 40, at the beginning of the year, 815 will be dead at the end of the year, and, also, that the number living and dying every year, thereafter, will be as represented in the table. The assumption is that the future mortality of the *Company* will be as thus represented and this assumption is regarded, by all competent actuaries, the world over, as a perfectly safe one. It is also assumed that 4 per cent. compound interest will be received, by the company, on the reserve accumulations of the policy, and this is also regarded as a safe assumption. On these assumptions of future mortality and interest, by a process not necessary to explain here, the *net* annual premium is found to be $23.68. It is then assumed that $7.89, annually, will be a safe contribution for expenses. Adding these two, the result is $31.57, which is the *gross* annual premium, at age 40, for $1,000 of insurance, during life. The assumption of future expenses is entirely arbitrary and varies with different companies, ranging from 20 to 40 per cent. of the net premium.

***b.*—The Company must have in hand, from year to year, the accumulations of *reserve* provided by law, safely invested in securities earning a rate of interest not less than that assumed in making the premium. If a higher rate be realized, a dividend can be paid.**

To illustrate.—Suppose that the insured is 40 years old at the beginning of the *first* policy year; that the policy is for $1,000, Ordinary Life, and that the premium is based on the Actuaries' Table of Mortality, and 4 per cent. interest. The net annual premium is $23.68, and it is also the required legal reserve, at this, the *beginning* of the *first* year; but it gradually diminishes until, at the *end* of the year, it is only $14.41. The difference between the legal reserve at the beginning, and at the end of the

year,—$9.27—, is supposed to have been used in payment of death claims. At the beginning of the *second* policy year, after the premium for the year has been paid, the net annual premium, —always $23.68—, is added to the legal reserve at the end of the *first* policy year, $14.41, making $38.09, which is the required legal reserve at the *beginning* of the *second* policy year. This, also, as during the first year, gradually diminishes, until, at the *end* of the year, it is $29.31, which is the legal reserve at the *end* of the *second* policy year; and so on. It will be noticed that the legal reserve at the *end* of any policy year is always larger than it was, at the *end* of the last preceding year; and, also, that the reserve, at the *end* of *any* policy year added to the uniform net annual premium, *at the age when the policy was issued*, gives the legal reserve at the *beginning* of the *next* policy year. At the end of the *first* policy year, as has been shown, the legal reserve is $14.41; at the end of the *second* policy year it is $29.31, gradually increasing from year to year, until at the age of 100—in case of a life policy, based on the Actuaries' Table of Mortality—it is equal to the face value of the policy.

c—**Good Management.**

Under the Level Premium System the larger and more prominent companies, both in this and in foreign countries, are doing business. For convenient illustration, let it be assumed that a policy of $10,000, Ordinary Life plan, annual premium $264.90, has been issued on a life at age 35. This premium, the first year, is composed of the following elements, premising that it is based on the Actuaries' Table of Mortality, and four per cent. interest:

1.	**The Reserve Element**	$110.39
2.	**The Mortality Element**	88.27
3.	**The Expense Element**	66.24
	Gross Premium	$264.90

The Reserve Element.—Upon payment of the first annual premium of a Level Premium Policy, insurance law and mathematics require that a part of it shall be invested by the company and compounded, annually, at a certain rate of interest—usually four, or four and one-half per cent.—until the policy becomes a claim by death or maturity. Then it is applied in part payment of the claim. A part of every succeeding year's premium is also required to be thus invested. The accumulation of these investments is technically called "*the reserve.*" This *reserve* becomes larger and larger the longer the policy remains in force, until it equals in amount the face value of the policy, at age 96 or 100, if a life policy; or, at the end of the endowment term, if

an endowment policy. A Level Premium Company, not having in hand the *reserve* prescribed by the state from which it received its charter is not solvent, and, when it would enter other states for business it must comply with the reserve laws of those states.

The *reserve* should not be confounded with surplus. It is not surplus. It may produce surplus, as will be seen further on. The *reserve* can be used for no purpose whatever while the original policy is in force, except for accumulation. If a note has been given in part or full payment of a premium, it is a part of the *reserve*. If a policy were to be sold, to the company or another party, the *reserve*, at date of sale, indicates its cash value. If the original policy were to be exchanged for a similar, smaller one, a paid-up, one upon which further payment of premiums would not be required, the reserve determines the amount of such paid-up. It would be what the reserve would pay for at your then age, according to the rules of the company.

By referring to Table No. 19, it will be seen that the *reserve* on the assumed policy, at the end of the first year, is $114.81, and at the end of the 65th year, $10,000. If the policy were for a different amount; or, for the same amount at a different age; or, in general, if the age, kind or amount of policy, either or all of these were different in any respect, then the *reserve* would be different. It is assumed that the *reserve* on this policy will earn four per cent. compound interest; that, during the first policy year, $88.27 will be used in payment of death claims, and $66.24 for expenses in each and every year. If these assumptions be realized, no more and no less, and no dividends or profits accrue from other sources to reduce the premiums, then the insured will pay the Level Premium of $264.90, every year, during life. Thus paying, for the whole term of life, he will be insured, *not for* $10,000, but as follows: At the end of the first policy year, $9,885.19; at the end of the tenth year, $8,665.88; at the end of the fifteenth year, $7,857.00; at the end of the thirtieth year, $5,153.62, and so on, for a decreasing amount, year after year, until, at the end of the sixty-fifth year, at the age of 100, he will have *no insurance*, as the *reserve* will then just exactly equal the face value of the policy. It is a very remarkable characteristic, therefore, of "The Level Premium System", that a policy-holder is never insured for the full face value of his policy and additions! His insurance is only for a sum equal in amount to the difference of these and their reserves, and this difference is the amount which the company insuring him is said to have at risk.

Thirty-four Level Premium Life Companies reported to the Massachusetts Insurance Department December 31, 1899. According to their sworn statements, in these reports, their net total assets amounted to $1,540,686,885. Their reserves amounted to $1,267,263,247! The reserves, therefore, constituted over eighty-two per cent. of their assets!!

Amzi Dodd, president of THE MUTUAL BENEFIT LIFE INSURANCE COMPANY, of Newark, New Jersey, one of the largest and oldest Level Premium Companies in the United States, in his Annual Report, Jany. 1, 1883, says, with reference to the reserve accumulations of companies, as follows:

"In regard to this fund a few explanatory words may be useful. Each policy is credited on the company's books with a separate reserve, according to its age, kind and amount. It arises from the simple circumstance that the risk of death (and, therefore, the cost of insurance) increases with each year of life, while the premium which is paid on the policy differs in amount from the cost of insurance. Out of 1,000 persons, living at the age of 35, our American Experience Table of Mortality shows that *nine* will die in the ensuing year. Out of 1,000 living at the age of 45, *eleven* will die; out of 1,000, at 55, *eighteen;* out of 1,000, at 65, *forty;* out of 1000, at 70, *sixty-two;* out of 1,000, at 80, *one hundred and forty-five;* at 85, *two hundred and thirty-six;* at 90, *four hundred and fifty four;* at 92, *six hundred and thirty-five;* at 94, eight hundred and fifty seven; at 95, *one thousand*—that is to say, by the table, life is not extended beyond 96.

"From the above figures it appears how the cost of insurance increases yearly. This increasing cost would be the *natural* premium. For the sake of convenience, the sum ordinarily agreed to be paid in each year, is different, and is called the *artificial* premium. During many years after the policy is issued, the artificial premium is greater than the natural, and in after years it is less. In case of a policy issued at the age of 35, the artificial premium is greater than the cost of insurance till the insured reaches the age of 56. After that age it grows rapidly less.

"Out of this state of things arises the whole matter of reserves, so fundamental and so much discussed in Life Insurance. Simple as it is when stated, it is remarkable how often it is imperfectly, or obscurely conceived. If the policy contract, instead of calling for the same premium each year, should call for the gradually increasing natural premium, there would be no need of reserves or accumulated funds. The Company and its members would do business on the rule of "pay as you go." The policy-holder would get yearly the equivalent of his money paid. But under the system almost universally in use he pays largely in advance, and the Company holds the money to offset against insurance in after years, when the insured does not wish to be called on for larger payments. The reserve fund thus arising is sometimes called the *wealth* of Life Insurance Companies. It is obviously not such; but a *debt* from the corporation to its members: a great trust fund confided to the managers.

"The foregoing will serve to indicate several points to which only a brief reference need now be made: *Firstly*—The paramount importance of keeping an ample reserve fund securely invested. It is vital to the fulfillment of the company's contracts with its members. *Secondly*—Why it is that a company should make an equitable allowance for the value of a policy when the holder can no longer pay premiums, or from any cause discontinues them. The company has in its hands a reserve for the policy, the most of which it can return either in cash or in the form of insurance, without injury to its other members or policy-holders. The reserve is held for the future needs of the policy, and when such needs cease to exist a fair return can be made."

The Mortality Element.—The name sufficiently indicates its use. In the premiums under analysis, it is $88.27 the first

year, and is the maximum amount chargeable to the insured, in that year, as his contribution to the death fund. Sometimes the death rate is in excess of that assumed, and the expense element, or loading, is then drawn upon to make up the deficiency.

Column (3), Table No. 19, shows the amount of insurance, from year to year, that the company has *at risk* on the assumed policy. It is at all times the excess of the face value of the policy over the *reserve* in hand. When the insured dies, this excess or amount at risk is paid from the Mortality Elements of the premiums of surviving policy-holders. To illustrate, suppose death occurs at the end of the tenth policy year. The reserve is $1,334.12. This lacks $8,665.88 of paying the $10,000. This deficit, therefore, must be paid from the Mortality Elements of the surviving policy-holders' premiums, as stated before.

According to the Actuaries' Table of Mortality the cost of insurance, at age 35, is only $9.29 for each $1,000. At age 50, it is $15.94; at age 60, it is $30.34; at age 70, it is $64.93; at age 80, it is $140.41; at age 90, it is $323 73; and at age 99, it is $1,000 for $1,000 of insurance! From this it is seen that, if no accumulations were held in reserve, under The Level Premium System, the death rate would eventually be so large that the *entire premium*,—the three elements combined—, would be insufficient for the payment of death losses, alone, saying nothing of expenses. But the constantly increasing *reserve* is continually diminishing the amount of insurance at risk, so that the *decrease of risk* neutralizes *the increase of mortality*.

The Expense Element.—"The net premium," says Gustavus W. Smith, "is the amount that will, on the designated data —namely, rate of interest and table of mortality—exactly effect the insurance."

"Loading"—The Expense Element,—, says Elizur Wright, "is the addition which is made to the 'net premium,' to provide for commissions and other working expenses, and for occasional excesses of mortuary loss."

In the premium under analysis the expense element is $66.24. This is the assumed, maximum, annual charge against the insured for expenses or unforeseen contingencies. By adding the reserve and Mortality Elements of any premium, we obtain what is called the "net premium," which, in the example selected, is $198.66; then, by adding The Expense Element, we obtain the Gross Premium of $264.90. Net premiums —age, kind and amount of insurance being the same—are the same in all Level Premium Companies that base their rates on the same Mortality Table and rate of interest; but the Gross Premiums are most always different, because of the difference of the Expense Elements. Of two Level

Premium Companies, one has been charging a Gross Premium of $313.00, and the other only $266.10, for $10,000 of insurance, life plan, age 40, the *first year*. Their net premiums are the same, but the Expense Element of the former is $89.46, while that of the latter is only $42.56. The dividends at the end of the first year, if used in part payment of premiums, would possibly reduce the second year's payment in each to about the same amount, and, after a few years, the higher price company, at first, might prove to be less expensive in the long run.

The *Reserve* and *Mortality* Elements are determined by careful mathematical calculations, while the *Expense* Element, or "loading," as it is technically called, is entirely arbitrary.

SOURCES OF DIVIDENDS.

In the Level Premium System.

1.—Dividends arising from having received a higher rate of interest on the reserves than that assumed.—It has been stated that the reserves of every company must be invested and compounded annually, at a certain rate of interest, *fixed by law*. In the example selected, we assume the rate to be four per cent. If only four per cent. be realized, there can be no dividends from this source. But, suppose, for illustration, that the reserve earns six per cent. compound interest, or *two per cent.* more than that assumed. By referring to col. (5), table No. 19. it will be seen that this gives a dividend, end of 1st year, of $2.30; end of 5th year, $12.26; end of 10th year, $26.68; end of 15th year, $42.86; end of 20th year, $60.26; end of 25th year, $78.50; end of 30th year, $96.92; end of 35th year, $114.64; end of 40th year, $131.00; end of 45th year, $145.62; and at the end of the 65th year, $200!! Columns (4), (6), and (7) show what the dividends would be if the reserves were to earn five, seven or eight per cent. compound interest. One of our most prominent Life companies realized an annual average of *eight and one-quarter* per cent. compound interest on its reserves, from 1872 to 1883; but in 1883 it was only a trifle more than *six and three fourths* per cent., which, although much reduced, was very high in comparison with that of some other older companies. Another company that received *seven and one-fifth* per cent. interest on its reserves in 1873, realized less than *five per cent.* in 1883! This reduction of interest has but little effect on the dividends of policies that have been in force only a few years, when the reserves are comparatively small; but, on *old* policies with large reserves there has been a marked reduction of dividends. The companies should not be censured as it could not be avoided. Agents and solicitors of comparatively young companies have sometimes seized upon the fact of this large reduction of dividends on old

policies in the older companies, and made it the basis of severe and unjust criticism by comparing *recent*, with former dividends on the same policies before interest had dropped.

The reserves of the Level premium companies doing business in Massachusetts, as shown by official reports, Dec. 31, 1899, amounted to $1,267,263,247. If only five per cent. interest were realized on these reserves, the dividends resulting therefrom would amount to over twelve millions of dollars; if six per cent. were realized, the dividends would be more than twenty-five millions of dollars; and, if the reserves earned seven per cent., the dividends would be over thirty-six millions of dollars!!

2.—Dividends arising from having experienced a less mortality than assumed.—The mortality element of a premium is the annual contribution of the insured for the payment of death losses. In the premium under analysis it is $88.27 for the first year. If it be not all used for that purpose, the unused portion will be returned or credited to the policy-holder at the end of the policy year, improved by interest, as an element of his dividend for that year. Dividends from this source, in our best conducted companies, where extreme care has been exercised in the selection of sound lives, have been quite large, amounting some years to twenty or even thirty per cent. of the assumed mortality. So long as the actual mortality, among the members of a company, is less than the mortality indicated by the table upon which its premiums are based, there will be a constant annual surplus for dividends from this source. If a company be *National* in character, with its business sufficiently large for a safe average, and quite evenly distributed over the whole country, there need be no apprehensions of serious trouble from epidemics, wars, earthquakes, etc., etc. The great law of mortality operates with as much precision as the laws of light, heat, electricity and gravitation.

Several years ago a special agent of a New York company was sent on business to one of its General Agencies in New England. While there, the General Agent remarked that he had *one* policy-holder who was always *grumbling*. His policy was for only $1,000, but his fruitful imagination was constantly conjuring up something that might possibly happen to the company and his policy thereby become worthless. Sometimes it was one thing, and at other times, another. Just at that time he was fearful that some fatal epidemic might sweep over the country, and, if not all, a very large percentage of the policy-holders of his company would suddenly die and the company thus become hopelessly insolvent. The general agent expressed a desire that the special should have an interview with this troublesome policy-holder.

An interview, therefore, was arranged, and in a few hours the special agent and the vexatious policy-holder confronted each other in the private office of the general agent. After customary preliminaries, the policy-holder said, "What are the assets of your company?" "25 millions of dollars" was the reply. "What amount of insurance has the company in force?" was the next question. "165 millions of dollars" promptly responded the special. "Now, sir," rejoined the policy-holder, "suppose all your policy-holders were to die before to-morrow morning, how could the company pay 165 millions of dollars, when, according to your statement, just made, it has only 25 millions of dollars to pay it with?" The special agent replied, "I will answer your questions by asking another. I will suppose you have three sons whose ages are five, ten and fifteen years, respectively, and that you have decided to make a permanent investment by which each of these sons shall receive, at age 21, $1,000 in cash. Your youngest son will be 21 in 16 years; the next older, in 11 years, and the oldest son in six years. Assuming that money will earn four per cent. compound interest, you find that $533.90 will amount to $1,000 in sixteen years; $649.60 will amount to $1,000 in eleven years, and $790.30 will amount to 1,000 in six years. You make your investments, accordingly, and you have the best of reasons for believing that each of these sons will receive the $1,000 thus provided for at the age of 21. You know that sixteen years must elapse before the youngest son will be 21; the next older will not be 21 until the end of eleven years, and it will be six years before the oldest son will be 21. But what if all three of these sons *were to become* 21 *years old to-morrow?* Your investments would not pay the $3,000, would they? If all our policy-holders were to die before to-morrow morning, it would be a phenomenon *as exceptional* as if your three sons were to become 21 years old to-morrow. In that event our 25 millions of dollars would not pay the 165 millions of dollars any more than your investments would pay the $3,000. One event is as likely to occur as the other."

3.—Dividends arising from the expenses having been less than those assumed.—If the expense element of a premium, which, in the example for illustration is $66.24, is not all needed for the purposes indicated, the balance is paid back or credited to the insured, with interest earned, at the end of every policy year, as an element of his dividend. In looking over the records of the companies for a series of years, it will be seen that their expenses have averaged from about $5.00 to $15.00 per annum for each $1,000 of insurance in force. The lower averages, with rare exceptions, are those of the older companies having large amounts of old business on their books, in which the agents have no renewal interest. This showing, however, is to some extent delusive. There are three well-defined periods in the expense of every

company's business,—(1), the expense of procuring new business; (2), the expense of taking care of it after the first year and until the agents' renewal commissions terminate; (3), the expense *after* the renewal commission period. If our insurance laws would require every company to report its expenses during each of these periods, *separately*, one would probably be better qualified to judge more accurately of the comparative merits of the companies, in this respect.

4. Dividends from Lapses and Forfeitures. A policy is said "*to lapse*" if the premium is not paid when due. If the Company accept the policy afterwards, upon certificate of health, or otherwise, the policy is then known as a "*Restored Policy.*" A policy is "*forfeited*" when one or more of its conditions of non-forfeiture are violated. These conditions vary in the different companies, and in the different kinds of policies issued by the **same** company. The margins made, therefore, on lapses and forfeitures, depend not only upon the company that issued the policy, but also upon the kind of policy issued. A policy, in some companies, may *lapse* and not be *forfeited;* or, it may be *forfeited* without *lapsing.* In other companies a *lapsed* policy is also a *forfeited* policy, until restored, or a paid-up be issued in exchange. Every kind of a policy in every company *will lapse*, if the premium be not paid when due; but the consequences to the policy-holder, of the lapse, would be widely different in different companies and in different forms of policies. If the lapsed policy is a Life or Endowment Policy, having been in force two or three years, the consequences depend entirely upon the policy contract of the company that issued it. If in a a certain class of companies, it may be restored—upon giving certificate of health—, or exchanged for a smaller paid-up, *if attended to* within a limited time; or, it may be surrendered for cash. If in another class of companies the policy would be *continued*, so long as the dividend accumulations, if any, would carry it, at the orignal premium rate; if in another class, the lapsed policy, itself, would, immediately, without notice or application, become a paid up for a *smaller* amount payable when the original policy would have been ; if in still another class, it would be continued, for the full amount, so long as the *reserve* would carry it, at single payment *term* rate, without any action on the part of the insured, and so on.

The conditions and consequences of *forfeiture* are as multiform as are those of lapses, but more disastrous to the insured, depending upon the companies selected. Prompt payment of premium is not always a safeguard against forfeiture. Incorrect statements—intentional or otherwise, material or immaterial—made in answer to questions asked in the application for insur-

ance, sometimes forfeit the policy, although in modern practice the incontestable clause debars a company from declaring such forfeiture except within a period of from one to three years, or, in the cases of some companies, during the lifetime of the insured. Suicide by the insured, whether sane or insane, voluntary or involuntary; excessive use of intoxicants; going beyond the prescribed limits of travel; engaging in certain occupations, etc., etc., are forbidden by the terms of a majority of the companies' policies during a certain number of years after the issuance of the contract. Most policies provide, however, that in case of such violations of their terms the company will be liable only for the amount of the reserve accumulated at time of forfeiture, or in some cases the sum of the premiums paid. The tendency of the modern contract is toward greater simplicity, so that the insured, having once been accepted, the company virtually binds itself to pay the policy on the sole condition that the premiums have been regularly paid. No agent has authority to waive a lapse or forfeiture, so that when it occurs the entire reserve and dividend accumulations are in imminent peril.

5. Dividends from Cash Surrender Values.—The expression, "*Cash surrender value,*" means, practically, this: If a company were to offer $500 *in cash*, for a policy, that would be the cash surrender value of that policy in that company. In *another* company it might be $800, or even $1,000! The cash surrender values of policies issued by companies of less than half a dozen states are regulated by law; but, with these exceptions, the cash surrender value of a policy is whatever the company that issued it offers for it. It is now generally stipulated in the policy, but is sometimes left an open question until applied for by the policy-holder. The basis of cash surrender values, in all American Companies, is the reserve values.

6. Dividends arising from changes. It sometimes occurs that a policy-holder, after having been insured a few years, desires to change his policy for one of another kind. It may be an Ordinary Life Policy and he prefers an Endowment or one upon which all the premiums may be paid in ten, fifteen, or twenty years; or, he may wish to reduce the amount of his present policy. As a general rule any such change is attended with more or less loss to the insured, and a corresponding profit to the company.

CHAPTER VIII.

MODERN LEVEL PREMIUM CONTRACTS.

NUMEROUS NEW FORMS.—ELIMINATION OF RESTRICTIONS.—EXTENSION OF NON-FORFEITURE PRINCIPLES.—INSTALMENT AND CONTINUOUS INSTALMENT CONTRACTS.—INVESTMENT INSURANCE.

Managers of the several life insurance companies of the United States during the past twenty years have devoted a large amount of time and labor to the preparation of new forms of policies designed to attract the insuring public by their adaptibility to varying circumstances. Many of these forms have been in evidence for awhile, and then been withdrawn to make room for others still more advantageous. As in every other line of business, so in life insurance, only the fittest survive, and this applies to contracts as well as to companies. The ordinary forms of policy, such as whole life, limited payment life and endowments, payable either at the end of a specified period or on attaining a certain age, still retain their popularity, and doubtless will continue to comprise the great majority of the contracts issued annually so long as life insurance shall last. The improvements in these contracts have been mainly in the direction of brevity and simplicity of language, the elimination of onerous conditions and the virtual placing of the control of the contract in the hands of the policy-holder. The restrictions as to residence, travel and occupation have now been so modified as to leave the policy-holder untrammeled after the lapse of a comparatively short period, while in some cases the policies are practically unrestricted from the date of issue. The suicide clause now, as a general rule, applies for not more than three years after date of issue, while the old forfeiture provision for the excessive use of intoxicants or narcotics has almost entirely disappeared.

It is in the direction of non-forfeiture, however, that the most improvement has been made. The old forms of poli-

cies, Tontine and Non-Tontine alike, were particularly harsh on those policy-holders who failed to keep up their premium payments. Non-payment of premium on a certain day forfeited the contract, and the policy-holder was left at the mercy of the company for any return of his equity in the contract. Non-forfeiture laws are still few in number, and some of them make it compulsory on the policy-holder to apply for the surrender value within a certain time, but in this case, what legislation has neglected competition has effected. One after another the life insurance companies have fallen into line and recognized the rights of the policy-holders to an equitable surrender value after the payment of premiums for a certain number of years. A majority of the companies now offer three options of surrender value, one of which is automatic and takes effect without action on the part of the insured. These three options are the stipulated value in cash, or in paid-up insurance, or in extended insurance, one of the two latter, according to the practice of the several companies, being automatic. A few companies are still more liberal in their non-forfeiture regulations, their policies providing that they cannot lapse so long as there is an amount of reserve standing to their credit sufficient to pay a quarterly premium. Such advances with interest are charged against the policies, and the insured have the option at any time of paying up all or part of the advances, thereby restoring the value of the contracts in whole or in part. Another improvement is the loan feature under which policy-holders, after the lapse of two or three years, may borrow on the security of their contracts certain sums, in most cases equal to the reserve on the policies at the end of the existing policy year. This feature enables many a policy-holder to continue in the company, whereas, under the older forms, he would have had to drop out for non-payment of premium. The object of the companies in granting all these benefits is to hold the policy-holder, and, although premiums are due promptly on the date specified, it has become customary to grant thirty days of grace during which the insurance remains in full force, subject only to the deduction of the premium due, with interest, in the event of death before the thirty days expire.

Having thus summarized briefly the liberalized conditions of the policies generally it is desirable to call particular attention to some special forms. In the first place it may be said that the introduction of the deferred dividend forms has done much to popularize life insurance. It is no longer a case of having to die to win, but the prudent man may so adjust his insurance as to reap the whole benefit of it himself when the

need of protection for his wife and family has passed away. By taking a contract with a ten, fifteen, or twenty-year deferred dividend period he finds at the end of the time selected a number of options presented to him for a choice. If he still needs the insurance as a protection it is there, but if, on the other hand, the need for life insurance protection has passed away and ready cash will suit him better, the cash is at his disposal. Or he may provide himself with an annuity for life or for a fixed period of years, or if none of these suit him some one of various combination options may be selected. In short, whatever may be his changed circumstances some option will suit them.

So numerous are the forms of policy contract now offered to the public that extended reference to all is impossible in a work of this character, but some are particularly deserving of mention. Instalment policies are of comparatively recent origin, and they answer a purpose which every prudent man can deeply appreciate. The sudden placing of a large sum of money in the hands of a widow or a person unacquainted with the investment of funds has often resulted in heavy loss, thereby depriving the beneficiaries of that protection which the husband and father had labored so hard to provide. The instalment policy offsets this by paying only a certain percentage of the face at death and the balance in equal annual instalments, extending over a period selected by the insured at the time of taking out the contract. Thus, a $10,000 policy payable in twenty annual instalments provides $500 at the death of the insured and $500 per annum thereafter for nineteen successive years. Should the beneficiaries die before all the instalments have been paid the remaining instalments will be paid, as they fall due, to the heirs, or commuted into a lump sum. The insured generally has the option of directing that the policy be paid in a lump sum instead of in instalments, in which case the company simply computes the present value of twenty successive annual instalments at date of death and pays the beneficiary. This lump sum is, of course, less than the face of the policy, as the question of interest during the time the money would be in the hands of the company if paid in instalments, has to be taken into account. The instalment feature can be applied to any ordinary form of contract, and many companies do not issue special instalment contracts, but simply attach a proviso to the regular forms that the face may be paid in equal annual instalments together with interest on unpaid balances.

Continuous Instalment policies are an outgrowth of the

instalment idea, and have been described by some competent authorities as the most valuable improvement in life insurance practice ever devised. A continuous instalment contract provides that should the beneficiary live beyond the period during which the specified number of instalments have been paid, the company will continue to pay the annual instalments so long as the beneficiary shall live, thus enabling a man to provide a sure and certain life income for his beneficiary. In figuring the premiums on such contracts the age of both the insured and the beneficiary must be taken into account, for it is obvious that a beneficiary aged twenty has a greater life expectation than one aged forty. On endowment contracts the continuous instalment feature works out particularly favorable. For example, a man aged twenty-five takes out a twenty-year endowment policy for $10,000, making his wife, aged twenty, the beneficiary. Assuming that he is living at the end of twenty years, the company immediately begins paying him an annual income of $500, and continues it so long as he lives, whether that be ten, twenty or even fifty or more years. Should he die after receiving one or more instalments, or even before the end of the twenty-year endowment period, and his beneficiary survive him, the company will pay her the instalments so long as she may live, whether it be twenty or fifty years. Should both insured and beneficiary die before twenty annual instalments have been paid, the commuted value of the unpaid instalments is payable to the estate. By these continuous instalment contracts the benefits of life insurance are certain both to the insured and beneficiary to the utmost possible limit.

Investment Insurance.—Many contracts of life insurance have been devised with the idea of appealing to investors. To this class belong those contracts which provide for an income at an agreed rate of interest for a specified number of years, at the end of which time the face value of the contract becomes payable. The investment idea is emphasized by calling these contracts bonds, and their safety is still further emphasized by the use of the word "gold." A twenty-year five per cent. gold bond is the favorite form of this contract, and it is issued either on the whole life, twenty-payment life, or twenty-year endowment form. On the maturity of the contract, by death or otherwise, the company issues as many thousand-dollar bonds as the face of the contract calls for, the principal of which is due in twenty years, and on which five per cent. interest is paid semi-annually in advance. A purchaser of these bonds, therefore, provides a five per cent. in-

come for his beneficiaries for twenty years with a lump sum at the end of the period. In the endowment forms, if the insured survive the endowment period, he receives the income himself, together with the proceeds of the bonds at maturity. In view of the increasing difficulty in securing good investments yielding over three per cent. net, these so-called gold bonds and investment contracts generally offer attractions to investors.

CHAPTER IX.

NON-FORFEITURE LAWS.

THE MASSACHUSETTS NON-FORFEITURE LAW OF 1880.—LETTERS AND ANSWERS.—EXAMPLES ILLUSTRATING THE LAW.

In the original edition of The Three Systems the author went very thoroughly into the benefits of the Massachusetts Non-Forfeiture law, passed in 1880. This law was amended in 1887 and again in 1896, and by a bill passed in 1900 will be entirely supplanted as to all new contracts issued on and after January 1, 1901. As, however, the old law still applies to existing contracts, and is of considerable historical interest, the data is retained here, being followed by the amended laws of 1887 and 1896 and the new law of 1900.

The companies doing business under **The Level Premium System** may be properly grouped into the following classes :

CLASS A.

This class includes all the Life Companies chartered by and doing business under the authority and supervision of the commonwealth of Massachusetts. They are distinguished from all other companies doing business in America because of "**An Act limiting the Forfeiture of Policies in Life Insurance Companies,**" approved April 23, 1880, taking effect on the fifth day of March, 1881, in compliance with which all their policy contracts are drawn. The law is given in full, as follows:

Public Statutes, Chap. 119, Sections 161-166. Sect. 161. No Policy of Life or Endowment Assurance issued after the thirty-first day of December, in the year eighteen hundred and eighty by a domestic company shall become forfeited or void for non-payment of premium after two full annual premiums have been paid thereon, in cash or note, or both ; but upon default in a subsequent premium payment such policy shall become subject to the conditions expressed in the four following sections, any stipulation or condition of forfeiture contained in the policy or elsewhere to the contrary notwithstanding ; and any waiver by the assured of the provisions of this and the four following sections shall be void ; but the provisions of this section and of said sections shall not prevent the performance of any

stipulation or condition in any policy issued before the fifth day of March, in the year eighteen hundred and eighty-one.

Sect. 162. In case of default in the payment of a third or of any subsequent annual premium on any such policy, then, without further negotiation or stipulation, such policy shall be binding upon the company for an amount of paid-up insurance which the then net value of the policy, less any indebtedness of the assured to the company and a surrender charge as provided in the following section, will purchase as a net single premium for Life or Endowment Assurance maturing or terminating at the same time and in the same manner as provided in the original policy contract; that is to say, no condition of the policy contract other than for the payment of premiums shall be affected by the provisions of sections one hundred and sixty one to one hundred and sixty-five inclusive; nor shall any change be made in the terms of said contract on account of default in premium payment, after two full annual premiums have been paid as provided in the preceding section, except as herein set forth. The net value of the policy, including all dividend additions declared thereon at the date of said default, shall be ascertained according to the "combined experience," or "Actuaries'" rate of Mortality, with interest at four per cent. per annum; and from such value shall be deducted any indebtedness of the insured to the company or notes held by the company against the insured, and a surrender charge to be determined as provided in the following section.

Sect. 163. Said surrender charge shall be determined as follows: Assuming the rate of mortality and interest mentioned in the preceding section, the present value of all the normal, future, yearly costs of insurance which by its terms said policy is exposed to pay in case of its continuance shall be calculated, and eight per cent. of this sum shall be the legal surrender charge.

Sect. 164. When after the payment of two annual premiums as provided in section one hundred and sixty-one the insurable interest in the life of the insured has terminated, the net value of the policy, subject to the conditions named in section one hundred and sixty-two, shall be a surrender value payable in cash; and upon the termination of such insurable interest the holder of a policy upon which by its terms no further premiums are payable may upon any anniversary thereof claim and recover in cash from the company a surrender value computed as aforesaid; but upon policies of prudential or industrial insurance, on which the premiums are five cents per week and upwards, but not exceeding fifty cents, the surrender value shall in all cases be payable in cash.

Sect. 165. The insurable interest named in the preceding section shall be construed to have terminated when the insured has no minor or dependent child; and his wife, if he has one, and any living beneficiary or beneficiaries named in the policy, shall join in the application for surrender thereof.

Sect. 166 The provisions of the seven preceding sections shall not apply to foreign life insurance companies.

As there have been many contradictory statements made with reference to a policy-holder's *legal* claim, under this law, for cash surrender values, a communication was addressed to the HON. ELIZUR WRIGHT with reference to it. The communication and his answer are as follows:

"CHICAGO, Ill., Aug. 24, 1885.

HON. ELIZUR WRIGHT,
Boston, Mass.

Dear Sir.—Referring to the Non-Forfeiture Law of Massachusetts, 1880, Public Statutes, Chap. 119 Sects. 161–166, inclusive, of which you are the recognized author, will you please state under what form of policy, if any; or, under what conditions a policy-holder can *not* claim the cash surrender value of a policy issued under this law, after two or more full annual premiums shall have been paid, *in cash*, and no conditions of non-forfeiture named in the policy having been violated

Very truly,

MERVIN TABOR,
State Actuary."

"BOSTON, Aug, 26, 1885.

MERVIN TABOR, ESQ.,
Chicago, Ill.

Dear Sir.--I was not the author of that particular feature of the Massachusetts law about which you inquire. Undoubtedly, whoever was the author, he meant to prevent the payment of any surrender value, *in cash*, whenever "a minor or dependent child" existed who could be benefited by the policy, and to limit that benefit to further insurance. As if the adult beneficiary, if one should exist, and the insured father himself, were not better protectors of that child than the state or the courts could provide! That feature, in my judgment, is a little worse than worthless, as too many laws are, and it is practically inoperative, because it can apply only to a policy whenever the holder has neglected to have the cash surrender value for each year of its term, subsequent to the second, endorsed upon it. This endorsement is always made, I believe, by the company at issue, when requested, and I don't suppose the law means to preclude the company from performing any positive promise of cash.

Yours truly,

ELIZUR WRIGHT."

After receiving Mr. Wright's letter, it was thought advisable to communicate with the companies, themse ves, and accordingly the following communication was addressed to the President of each of the Massachusetts companies under date of Sept. 8th, 1885:

Dear Sir.—Inquiries are being made at this office with reference to the conditions requisite for obtaining the *cash surrender value* of a policy under Chap. 119, Sect's 161–166, Public Statutes of Mass. There seems to exist a wide difference of opinion. Some claim that whenever a policy-holder is entitled to a paid up by operation of the law, he is also entitled to the cash surrender value, instead, if desired; while others assert that no cash surrender values can be paid when the insured has a minor or dependent child. Earnestly desiring to not misrepresent you, and, after consultation with the Auditor of Pub. Accounts, who is Ex-Officio Supt. of the Insurance Department of this State, it has been thought best to address this communication asking your interpretation of the law, and your practice, bearing on the point under discussion. If it be your practice to extend cash surren-

der values beyond what, in your opinion, the law demands, to certain forms of policy contract, please make the distinction *very plain* between the cash surrender values secured by the *law*, and those voluntarily offered by the company's indorsement of the same.

Very respectfully,

MERVIN TABOR,
State Actuary.

In reply, the following communications have been received:

From the New England Mutual Life Insurance Company.

"BOSTON, Sept. 12, 1885.

MERVIN TABOR, ESQ.,
185 Dearborn St., Chicago, Ill.

Dear Sir.—Your favor of the 8th inst. is received. The policy of this company in the matter of the payment of cash surrender values of policies under the non-forfeiture law of 1880 is fully shown in the inclosed circular. Under this law, after two full payments of premium the insured is entitled to paid-up insurance without further negotiation or stipulation, or at his option may in all cases that come under the provisions of the circular receive the cash value of his policy. The law of 1880 is subject to interpretation by the courts, but until the matter has been adversely decided upon, we shall abide by and pay cash values as stated in the circular.

Very truly,

(Signed) BENJ. F. STEVENS,
President.

The following is a copy of the circular referred to by President Stevens:

"The attention of the public is requested to the two distinctive features of the Massachusetts Non-Forfeiture Law pertaining to Life Insurance—by which a *cash value* or paid-up insurance is assured to each Policy.

FIRST. Every Policy, upon which *two* or more Annual Premiums have been paid, has a *cash value* payable to the holder of the same, when application is made therefor, upon the anniversary of any subsequent Premiums, provided a legal discharge can be given by all parties interested. A policy made for the benefit of the insured can be legally surrendered by himself, if living, or, by his administrator or executor, in case of his death. A Policy made for the benefit of a married woman can be surrendered upon her receipt and that of her husband. If made for the benefit of children, it must be shown, to the satisfaction of the company, that the insured has no minor or dependent child.

SECOND. If the cash surrender value of a Policy is not applied for, upon the anniversary of the payment of an Annual Premium, as above mentioned, then such Policy, by lapse of payment of premiums, shall become, in the words of the law, "without further negotiation or stipulation,"—binding for an amount of Paid-up Insurance which is determined *according to the provisions of the law.* If desired, the amounts of cash surrender values and Paid-up Insurance will be put upon the Policy, and their payment guaranteed by the company. It is believed that this law—which applies only to *Massachusetts companies,*

and *not to Foreign companies represented in the State*—is the nearest approach to equity yet reached by State legislation. No other State has, upon its Statute Book, a law compelling companies to give to the insured an equivalent for the amount of premiums they have paid.

(Signed) BENJ. F. STEVENS,
President

A letter received from Walter C. Wright, Actuary of the New England Mutual Life Insurance Company, under date of Sept. 10, 1885, written during the absence of President Stevens, closed with the following sentence:

"We endorse values on all policies, and we are well satisfied with the working of the law."

From the State Mutual Life Assurance Co.

"WORCESTER, Mass., Sept. 22d, 1885.

MERVIN TABOR, ESQ.,
Actuary Insurance, Dept., Illinois.
185 Dearborn St., Chicago, Ill.

Dear Sir.—Our interpretation of the Non-Forfeiture Law of this State upon the points which you inquire about is this: In most cases a policy-holder when his policies lapse has the option of deciding whether he will take the cash surrender value of the same, or let it stand for a paid-up Insurance value as determined by the law. *After* lapse, if there be minor or dependent children, the cash surrender value cannot be paid to the insured. While the Company is under no obligation to pay cash surrender values except at the anniversary of the policy after the second, it frequently does pay these values at other times when asked to do so by the policy-holder. As, in nine cases out of ten, the cash surrender value is requested while the policy is still in force, frequently, therefore, the existence of minor or dependent children does not prevent payment. The distinction you see is this: The law applies only to lapsed policies, and gives the minor or dependent children a vested interest in the cash surrender value so that it cannot be paid to the insured. As we generally deal with policies that are in force we make the payment of the cash surrender value to the insured whether there are minor children or not. I believe this covers the questions you ask.

Yours very truly,

(Signed) A. G. BULLOCK,
President."

From the Massachusetts Mutual Life Insurance Company.

"SPRINGFIELD, Mass., Sept. 11th, 1885.

MERVIN TABOR,
Actuary,
185 Dearborn St., Chicago, Ill.

Dear Sir.—Your favor of the 8th came duly to hand. I have asked our Secretary and Actuary to give me their interpretations of the sections of Chap. 119, of Mass. laws referred to by you. Their replies I enclose herewith, and I trust they may answer your purpose. These opinions were written independently;

each officer being ignorant of what was written by the other, and so they may fairly be said to represent the company's understanding of the law. I would add that I fully concur with the views expressed in these letters

Yours truly,

(Signed) E. W. BOND,
President."

"SPRINGFIELD, Mass., Sept. 11th, 1885.

E. W. BOND,
President:

Dear Sir.—As requested by you, I have read Mr. Tabor's letter of the 8th inst., and to the questions therein, I reply as follows:

"Our understanding of the Massachusetts Law of 1880, is that at any of the times when a cash value would be claimed, as a right, by an insured person who had no minor or dependent child, the same cash value may be asked as a favor by an insured person who has a minor or dependent child, and the company may lawfully comply with this request, if a proper surrender can be obtained from the insured and the beneficiaries. In practice, this company is in the habit of so complying, but it does not *bind* itself to pay cash values in cases where the same are not required by the law, except that it agrees to pay the cash values on fifteen and twenty payment life policies (on the all cash plan) after they have become fully paid-up, on full surrender of each such policy on the anniversary of its date.

Very truly,

(Signed) OSCAR B. IRELAND,
Actuary."

SPRINGFIELD, MASS., Sept. 11, 1885.

E. W. BOND, ESQ.,
President:

Dear Sir.—In response to your request that I give you my interpretation of the so-called Non-Forfeiture Law of 1880, I would say that according to my understanding of sections 161 to 166, Chap. 119 of our Public Statutes, we cannot be compelled to pay the cash value fixed therein for a policy issued under the law, no matter whether the policy be written for the benefit of one's estate or for the benefit of wife, children or other persons, except when the insured has no minor or dependent children. When the insured has no minor or dependent children, he may insist upon such cash value, provided his wife or any other beneficiary mentioned in the policy, joins in the surrender to the company; and if the insured be in a condition to insist upon the cash value, he can only claim it on a second or subsequent anniversary of the policy. The law places no obstacle whatever in the way of the company's buying its policies issued under it, for cash, if they choose to do so, even when the insured is not in a condition to insist upon a cash value, provided the insured desires cash, and can give a clear and valid surrender of the policy by himself and all beneficiaries mentioned therein.

Our practice is to buy Act of '80 policies, paying their legal cash value after two years, provided we can get a valid surrender by the insured and all beneficiaries mentioned in the policy, but we at all times, reserve the right to stand upon the conditions of the law, if any circumstance should seem to make it advisable for the company to do so. The values under the law under consider-

ation, both in cash and paid up insurance, are endorsed on the back of our policy, and the printed matter in connection with the law itself, which is printed on the policy, plainly shows the rights of the insured and the rights of the company.

To two classes of policies issued by us, viz: 15 and 20 payment life policies, on all cash plan, we attach a rider, agreeing to pay the legal cash value at the end of 15 or 20 years from the date of the policy, or on any anniversary thereafter; provided we can get a valid surrender of the policy, regardless of whether the insured has minor or dependent children or not. You of course know that under such a policy, it might occur that the insured could demand the cash value of his policy at any time *within* the 15 or 20 years; so that our voluntary agreement embodied in the rider mentioned, may be said to be a promise additional to the rights to which the law entitles him; and a waiver of a right which *might* exist at the end of these terms to decline to pay the cash value.

I enclose a copy of the rider referred to, and also the back of our policy form; these show just how this matter is set forth to our members.

Very respectfully yours,

(Signed) JOHN A. HALL,
Secretary."

The following is a true copy of the "*rider*" referred to in the letter of Secretary Hall, for a 15-annual payment life policy. The rider for a 20-annual payment Life policy is the same, except "twenty" is inserted in place of "fifteen."

"After the payment of fifteen annual premiums, wholly in cash, on this Policy No. ————, the cash surrender value of the Policy, (computed according to the method described in sections 162, 163 and 164 of chapter 119, of the Public Statutes of Massachusetts) will be paid on the fifteenth or any succeeding anniversary of the date of its issue, upon full surrender of the Policy to the company by all parties in interest."

Printed on the back of the policy to which this "*rider*" is attached, is the following:

"**Cash surrender values** can only be claimed when the insurable interest has terminated; see sections 164 and 165 of the law."

From The John Hancock Mutual Life Insurance Company.

"BOSTON, MASS., Sept. 14, 1885.

MERVIN TABOR, ESQ.,
Chicago, Ill.

Dear Sir.—Enclosed please find form of our policy contract, from which you will please observe that "the cash surrender

values secured by law and those voluntarily offered by the com pany's indorsement of the same" are identical.

Very truly,

(Signed) S. H. RHODES,
Pres't."

On the back of the policy referred to is a table of cash, and paid up, values, over which is printed the following:

"The following table shows the amount of cash that can be realized on this policy at end of any year, provided the insurable interest as expressed in the statute (see above) has ceased; also, the amount of paid up insurance due at death (or if an endowment policy at end of endowment period) in case of non-payment of any premium."

From The Berkshire Life Insurance Company.

PITTSFIELD, MASS., Sept. 14, 1885.

MR. MERVIN TABOR,
State Actuary, &c.,
185 Dearborn St., Chicago, Ill.

Dear Sir.—In answer to your favor I would say that this office passes upon each application for surrender of policies, and determines as to what is necessary to secure for the company a good acquittance. Our counsel does not construe the act of 1880 as obliging the company to pay a cash surrender value if the insured has a minor or dependent child. The company has always endeavored to be liberal, in the construction of such laws as affect the interests of retiring members, but until the Act receives judicial construction by courts of competent jurisdiction, no claim as to its practice will be made in its behalf.

I am very respectfully,

(Signed) JAMES W. HULL,
Secretary.

Thus we have, in the foregoing correspondence, the full benefit of the construction of the present Non-forfeiture law of Massachusetts, by every Life Insurance Company affected by it. These companies have also given us, in an open, candid and frank manner, their practices under the law. They have not dodged a single point in our letter. They are evidently living up to not only the *letter*, but also the *spirit*, of the law; and, judging from this correspondence, we conclude that whenever a doubt arises as to the real meaning of the law they give their policy-holders the benefit of such doubt, if they can do so without involving themselves and consequently their membership —for they are all Mutual Companies— in legal complications that might possibly arise through the instrumentality of designing and unscrupulous parties.

The only difference in effect, concerning cash surrender values of policies issued by Massachusetts Companies, between the Massachusetts Insurance law of 1880 and the law of 1887 hereunto appended, is, that under the former there was a difference of opinion as to whether the holder of a policy—except industrial policies—could demand the cash surrender value of the same when there were minor or dependent children; the latter law gives the holder of any and all forms of policies the right to demand cash surrender values on any anniversary after two full annual premiums shall have been paid thereon. The law of 1887 also gives the Massachusetts companies the right to deduct five per cent. from the surrender value of all endowment policies; this right, however, has been and is being waived, wholly or in part, by most of the companies of that State.

EXTRACT FROM THE MASSACHUSETTS INSURANCE ACT OF 1887.

SEC. 76. All policies hitherto issued by any domestic life insurance company* shall be subject to the provisions of law applicable and in force at the date of such issue. No policy of life or endowment assurance hereafter issued by any such company shall become forfeit or void for non-payment of premium after two full annual premiums, in cash or note, or both, have been paid thereon; but in case of default in the payment of any subsequent premium, then, without any further stipulation or act, such policy shall be binding upon the company for the amount of paid-up insurance which the then net value of the policy and all dividend additions thereon, computed by the rule of section eleven, less any indebtedness to the company on account of said policy, and less the surrender charge provided herein, will purchase as a net single premium for life or endowment insurance maturing or terminating at the time and in the manner provided in the original policy contract; and such default shall not change or effect the conditions or terms of the policy, except as regards the payment of premiums and the amount payable thereon. Said surrender charge shall be eight per cent. of the insurance value of the policy at the date of default, which insurance value is the present value of all the normal future yearly costs of insurance which by its terms said policy is exposed to pay in case of its continuance, computed upon the rate of mortality and interest assumed in section eleven ("Combined Experience" or "Actuaries' Table" rate of mortality with interest at the rate of four per cent. per annum). Every such policy, after the payment

*—Section 1 of this law says "the word 'domestic' designates those companies incorporated or formed in this Commonwealth."

of two full annual premiums thereon, shall have a surrender value which shall be its net value, less the surrender charge, and less any indebtedness to the company on account of the said policy, and its holder may, upon any subsequent anniversay of its issue, surrender the same and claim and recover from the company such surrender value in cash: Provided, that from the surrender value of all endowment policies the company may deduct five per cent. * * * * * * Upon surrender, on any anniversary of its issue, of a policy which has become paid up after the payment of two full annual premiums, by force of the statute upon default in payment of premium, the holder shall be entitled to its net value, payable in cash: Provided, that from such net value of all endowment policies the company may deduct five per cent. But no surrender of a policy shall be made without the written assent of the person to whom the policy is made payable. Any condition or stipulation in the policy or elsewhere, contrary to the provisions of this section and any waiver of such provisions by the assured, shall be void.

In 1896 the law was again amended so as to provide that the surrender charge on all policies, both life and endowment, should be eight per cent. of the insurance value, the amendment of 1887 allowing a five per cent. surrender charge on endowments. It was also provided that the surrender values of prudential or industrial policies, with weekly premiums of not more than fifty cents each, should be payable in cash. The amended law is as follows:

All policies hitherto issued by any domestic life insurance company shall be subject to the provisions of law applicable and in force at the date of such issue. No policy of life or endowment insurance hereinafter issued by any such company shall become forfeit or void for non-payment of premium after two full annual premiums, in cash or note, or both, have been paid thereon; but in case of default in the payment of any subsequent premium, then, without any further stipulation or act, such policy shall be binding upon the company for the amount of paid-up insurance which the then net value of the policy and all dividend additions thereon, computed by the rule of section eleven, less any indebtedness to the company on account of said policy, and less the surrender charge provied herein, will purchase as a net single premium for life or endowment insurance maturing or terminating at the time and in the manner provided in the original policy contract; and such default shall not change or affect the conditions or terms of the policy, except as regards the payment of premiums and the amount payable thereon. Said surrender charge shall be eight per cent. of the insurance value of the policy at the date of default, which insurance value is the present value of all normal future yearly costs of

insurance, which by its terms said policy is exposed to pay in case of its continuance, computed upon the rate of mortality and interest assumed in section eleven. Every such policy, after the payment of two annual premiums thereon, or when by its terms it has become paid-up, shall have a surrender value, which shall be its net value, less the surrender charge, and less any indebtedness to the company on account of the said policy, and its holder may, upon any subsequent anniversary of its issue, surrender the same and claim and recover from the company such surrender value in cash. On policies of prudential or industrial insurance on which the weekly premiums are not more than fifty cents each, the surrender value in all cases shall be payable in cash. Upon surrender, on any anniversary of its issue of a policy which has become paid up after the payment of two full annual premiums, by force of the statute upon default in payment of premium, the holder shall be entitled to its net value, payable in cash. But no surrender of a policy shall be made without the written assent of the person to whom the policy is made payable. Any condition or stipulation in the policy or elsewhere, contrary to the provisions of this section and any waiver of such provisions by the insured, shall be void.—Sec. 76, chap. 470, laws of 1896.

The following examples illustrate the benefits of the law, and are based on the amendment of 1896:

Example I. Ordinary Life Policy.—Age of insured, 35; amount, $10,000; annual premium, $273, payable for life.

End of Yr.	Cash.	Paid-up.	End of Yr.	Cash.	Paid-up.
2	$59	$165	18	$2,466	$4,779
3	180	495	19	2,641	5,007
4	306	821	20	2,819	5,227
5	435	1,142	21	2,999	5,441
6	569	1,459	22	3,180	5,647
7	707	1,772	23	3,362	5,846
8	851	2,081	24	3,547	6,039
9	998	2,384	25	3,732	6,225
10	1,149	2,681	30	4,658	7,056
11	1,304	2,971	35	5,556	7,731
12	1,461	3,252	40	6,391	8,273
13	1,622	3,526	45	7,144	8,704
14	1,785	3,792	50	7,821	9,055
15	1,952	4,050	55	8,465	9,360
16	2,121	4,301	60	9,015	9,600
17	2,292	4,544	65	10,000	....

Example II. Twenty-Payment Life Policy.—Age of insured, 35; amount, $10,000; annual premium, $354, payable for twenty years.

End of Yr.	Cash.	Paid-up.	End of Yr.	Cash.	Paid-up.
2	$236	$663	18	$4,520	$8,761
3	434	1,192	19	4,885	9,259
4	640	1,717	20	5,265	10,000
5	854	2,240	21	5,383	....
6	1,076	2,760	22	5,503	....
7	1,308	3,277	23	5,623	....
8	1,549	3,790	24	5,745	....
9	1,800	4,301	25	5,867	....
10	2,060	4,807	30	6,478	....
11	2,330	5,309	35	7,069	....
12	2,609	5,807	40	7,620	....
13	2,899	6,301	45	8,116	....
14	3,199	6,794	50	8,563	...
15	3,511	7,285	55	8,988	....
16	3,834	7,776	60	9,351	....
17	4,170	8,267	65	10,000	....

Example III. Twenty-Year Endowment Policy.—Age of insured, 35; amount, $10,000; annual premium, $510, payable for twenty years.

End of Yr.	Cash.	Paid-up.	End of Yr.	Cash.	Paid-up.
2	$580	$1,086	12	$4,831	$6,496
3	925	1,679	13	5,370	6,971
4	1,287	2,262	14	5,935	7,435
5	1,664	2,832	15	6,528	7,888
6	2,058	3,391	16	7,151	8,330
7	2,470	3,939	17	7,806	8,762
8	2,902	4,475	18	8,497	9,184
9	3,352	4,998	19	9,227	9,596
10	3,823	5,510	20	10,000	....
11	4,316	6,009	..	....	....

In the year 1900 a bill was introduced and passed by the Massachusetts legislature providing for a change in the reserve standard on all new policies issued on and after January 1, 1901, from the Actuaries' table, with four per cent interest, to the American table, with three and one-half per cent interest. A proviso was further made that the companies might, if they choose, value such new policies by the American table, with three per cent interest. The same law provided for a change in the surrender charge on the new contracts, making it five per cent of the present value of the future net premiums at the date of default instead of eight per cent of the insurance value of the policy, and also making the contracts non-forfeitable at the end of three years instead of two, as provided by the old law. Following is the amended law so far as it relates to non-forfeiture:

SEC. 76. All policies issued prior to Jan. 1, 1901, by any domestic life insurance company shall be subject to the provisions of law limiting forfeiture applicable and in force at the date of their issue. No policy of life or endowment insurance issued after Dec. 31, 1900, by any such company, shall become forfeit or void for non-payment of premium after three full annual premiums have been paid thereon; but in case of default in the payment of any subsequent premium, then, without any further stipulation or act, such policy shall be binding upon the company for the amount of paid-up insurance which the then net value of the policy and all dividend additions thereon, computed by the rule of section eleven, less any indebtedness to the company on account of said policy, and less the surrender charge provided herein, will purchase as a single net premium for life or endowment insurance maturing or terminating at the time and in the manner provided in the original contract; and such default shall not change or affect the conditions or terms of the policy, except as regards the payment of premiums and the amount payable thereon. Said surrender charge shall be (unless fixed at a smaller rate by the policy) five per centum of the present value of the future net premiums at the date of default, which by its terms said policy is exposed to pay in case of its continuance, computed upon the rate of mortality and interest assumed in section eleven. But any company may contract with its policy-holders to furnish, in lieu of the paid-up insurance provided for in this section any other form of life insurance lawful in this commonwealth of not less value. Every such paid-up policy shall have a cash surrender value which shall be its net value, less any indebtedness to the company on account of said policy, and every policy which by its terms has become paid up shall have a cash surrender value, which shall be its net value less five per cent. of one net premium, and the holder of any paid-up policy may, upon any anniversary of its issue, surrender the same and claim and recover from the company such surrender value in cash. But no surrender of a policy shall be made without the written assent of the person to whom the policy is made payable. On policies of prudential or industrial insurance on which the weekly premiums are not more than fifty cents each the surrender value shall in all cases be payable in cash, which shall be a legal claim for not more than two years from the date of lapse. Any condition or stipulation in the policy or elsewhere contrary to the provisions of this section and any waiver of such provisions by the insu d shall be void.

CHAPTER X.

CLASS B.—NON-FORFEITURE LAWS OF MAINE, MICHIGAN, KENTUCKY AND MISSOURI.

B. CLASS.

Into this class are grouped all Life Insurance Companies doing business on the Level Premium plan, that are operating under the Non-forfeiture laws of their respective States—except Massachusetts—and also those companies, their States having no Non-forfeiture laws, that have adopted, voluntarily, Non-forfeiting forms of policies by which the reserves of their policy-holders are either partially or wholly protected after two or three *annual* premiums have been paid.

The Non-forfeiture Law of Maine.—Only one company is doing business under this law, and, in several respects, the *company* is issuing more liberal forms of policies than the *law* requires. The law which was passed in 1877 reads as follows:

"SECTION I.—Every policy of life Insurance issued on and after the first day of April, in the year of our Lord one thousand eight hundred and seventy-seven, by any company chartered by the authority of this State, which may be forfeited for non-payment of premiums, including all notes given for premiums or interest thereon after it shall have been in force three full years, and which shall not contain provision for a surrender value at least equivalent to the value arising under the terms of this Act, shall, nevertheless, be continued in force to an extent and for a period of time to be determined as follows, to wit: The net value of the policy, when the premium becomes due and is not paid, shall be ascertained according to the combined experience or actuaries' rate of mortality, with interest at four per centum per annum. After deducting from three-fourths of such net value any indebtedness to the Company, or notes held by the Company against the insured (which notes, if given for premium, shall then be cancelled), what remains shall be considered as a net single premium of temporary insurance; and the term for which it will insure shall be determined according to the age of the party at the time of the lapse of the policy, and the assumptions of mortality and interest aforesaid; but if the policy shall be an endowment payable at a certain time, or at death if it shall previously occur, then, if what remains as aforesaid shall exceed the net single premium of temporary insurance for the balance of the endowment term for the full amount of the policy, such excess

shall be considered as a net single premium or simple endowment, payable only at the same time as the original endowment, and in case the life insured survives to such time; and the amount thus payable by the Company shall be determined according to the age of the party at the time of the lapse of the policy, and the assumptions of morality and interest aforesaid."

"SECT. 2,—If the death of the life insured occur within the term of temporary insurance covered by the value of the policy as determined in the previous section, and if no condition of the insurance other than the payment of premium has been violated by the insured, the Company shall be bound to pay the amount of the policy the same as if there had been no lapse of premium, anything in the policy to the contrary notwithstanding; *provided*, however, that notice of the claim, and proof of the death, shall be submitted to the Company, in the same manner as provided by the terms of the policy, within ninety days after the decease; and, *provided*, that the Company shall have the right to deduct from the amount insured in the policy the amount, compounded at seven per centum per annum, of all the premiums that had been forborne at the time of the death, including the whole of the year's premium in which the death occurs."

The law was amended in 1887, and now reads:

Every life insurance policy issued after March 31, 1877, by any company chartered by this State, which may be forfeited for non-payment of premiums, including all notes given for premiums or loans, or interest thereon, after it has been in force three full years, and which does not provide for a surrender value, at least equivalent to the value arising under the terms of this and the following section, is nevertheless continued in force to an extent, and for a period to be determined as follows, to wit: the net value of the policy, when the premium becomes due if not paid, shall be ascertained according to the Combined Experience or Actuaries' rate of mortality, with interest at the rate of four per cent. a year: from such net value there shall be deducted the present value of the difference between the future premiums named in the policy, and the future net premiums on said policy, ascertained according to the rates of mortality and interest aforesaid, in no event, however, to exceed one-fourth of said net value, and in ascertaining said net value, when the premium is payable semi-annually or quarterly, there shall be deducted from the net value of the policy, assuming net annual premiums, the net premiums for the unpaid semi-annual or quarterly instalments for that year which shall not be considered an indebtedness, but as forborne premiums; what remains, after deducting any indebtedness to the company on account of the policy, or notes held by the company against the insured, which notes shall be canceled, shall be considered as a net single premium of temporary insurance, and the term for which it will insure shall be determined according to the age of the party at the time of the lapse of the policy, and the assumptions of mortality and interest aforesaid; but if the policy is an endowment, payable at a time certain, or at death if it should previously occur, then, if what remains as aforesaid exceeds the single net premium, of temporary insurance for the balance of the endowment term for the full amount of the policy, such excess shall be considered a net single pre-

mium for simple endowment, payable only at the same time as the original endowment, and in case the insured survives to that time; and the amount thus payable by the company shall be determined according to the age of the party at the time of the lapse of the policy, and the assumptions of mortality and interest aforesaid.

If the death of the insured occurs within the term of temporary insurance covered by the value of the policy as determined in the preceding section, and if no condition of the insurance other than the payment of premiums has been violated by the insured, the company shall pay the amount of the policy, as if there had been no lapse of the premium, anything in the policy to the contrary notwithstanding; provided, however, that notice of the claim and proof of the death shall be submitted to the company in the manner provided by the terms of the policy within one year after the death, and provided, also, that the company may deduct from the amount insured in the policy the amount compounded at seven per cent. a year of the ordinary life premiums at age of issue, that had been forborne at the time of the death, including the whole year's premium in which the death occurs, not exceeding five in number. But any such company may issue to a resident of any other State or country, a policy conforming to the laws of such State or country, and not subject to this and the preceding section.—Secs. 91, 92, chap. 49, laws of 1887.

The Non-Forfeiture Law of Michigan, *as amended*, in 1881:

SEC. 17. No policy of insurance on life, issued after this act shall take effect, by any company organized under the laws of this State, shall be forfeited or become void by the non-payment of any premium thereon, after the third, any further than as follows: The net value of the policy when the premium becomes due and is not paid, shall be ascertained according to the "American experience Table" rate of mortality with interest at four per centum per annum.

A surrender charge shall be first deducted from such net value on the following basis, to wit: From policies that have paid three full years' premiums, forty (40) per cent.; from policies that have paid four full years' premiums, thirty six (36) per cent.; from policies that have paid five full years' premiums, thirty-two (32) per cent., and so on in like manner, decreasing the discount four (4) per centum for each full years' premium paid, until the discount is exhausted, when no surrender charge shall be made.

After deducting the surrender charge from the net value, the remainder shall be considered a net single premium of whole life *non-participating insurance* and the amount it will insure shall be determined according to the age of the party at the time when the unpaid premium became due and the assumptions aforesaid in regard to rate of interest and table of mortality.

In case of any indebtedness on any policy, such indebtedness shall be first deducted from the net value remaining, after deducting the discount, and the remainder, if any, shall be used as the net single premium as aforesaid.

Two other States, in addition to those heretofore named, provide for absolute non-forfeiture of a policy after a certain period without action on the part of the insured. They are Kentucky and Missouri, and the laws are as follows:

KENTUCKY.

SEC. 122.—All policies hitherto issued by any domestic life insurance company shall be subject to the provisions of law applicable and in force at the date of such issue. No policy of life or endowment insurance hereafter issued by any such company, shall become forfeit or void for non-payment of premium after, in ordinary insurance two, and in industrial insurance five full annual premiums in cash have been paid thereon; but in case of default in the payment of any subsequent premium, then, without any further stipulation or act except as herein provided, such policy shall be binding upon the company for the amount of paid-up insurance which the then net value of the policy and all dividend additions thereon computed by the rule of section 116, less any indebtedness to the company on account of said policy, and less the surrender charge as provided herein, will purchase as a net single premium for life endowment insurance maturing or terminating at the time and in the manner provided in the original policy contract; and such default shall not change or effect the conditions or terms of the policy, except as regards the payment of premiums and the amount payable thereon: Provided, that policies of industrial life companies shall be surrendered to the company, and application for said paid-up policy be made in writing within eight weeks after said default, on blanks obtainable from the company for that purpose. Said surrender charge shall be eight per cent. of the insurance value of the policy at the date of default, which insurance value is the present value of all the normal future yearly costs of insurance which by its terms said policy is exposed to pay in case of its continuance, computed upon the rate of mortality and interest assumed in section 116. Every such policy subject to the conditions as to policies of industrial life companies as hereinbefore prescribed, after the payment of, in ordinary insurance two, and industrial insurance five full annual premiums thereon, in cash, shall have a surrender value, which shall not be less than two-thirds of its net value, computed by the rule of section 116, less any indebtedness to the company on account of said policy; and its holder may, upon any subsequent anniversary of its issue, surrender the same and claim and recover from the company such surrender value in cash. Upon the surrender, on any anniversary of its issue, of a policy which has become paid-up, by force of the statute upon default in payment of premiums, after two full annual premiums have been paid, the holder shall be entitled to not less than two-thirds of its then net value, computed by the rule of section 116. On policies of industrial insurance on which the weekly premiums are not more than fifty cents each, the surrender value in all cases shall be payable in cash. Upon the surrender, on any anniversary of its issue, of a policy which has become paid-up, after the payment of five full annual premiums, by force of the statute upon default in payment of premium, the holder shall be entitled to not less

than two-thirds of its net value, payable in cash. Any condition or stipulation in the policy, or elsewhere, contrary to the provisions of this section, and any waiver of such provisions of this section, and any waiver of such provisions by the assured, shall be void.

Approved July 1, 1893.

SEC. 116.—When the actual funds of any life insurance company doing business in this commonwealth are not of a net cash value equal to its liabilities, counting as such the net value of its policies, which shall be, until the 31st day of December, 1895, valued according to the "American Experience" Table of Mortality, with interest at four and one-half per centum per annum, and on and after that day shall be valued according to the "Combined Experience" or "Actuaries" Table Rate of Mortality, with interest at four per centum per annum, it shall be the duty of the Insurance Commissioner to give notice to such company and its agents to discontinue issuing new policies within this commonwealth until such time as its funds have become equal to its liabilities, valuing its policies as aforesaid. Any officer or agent who, after such notice has been given, issues a new policy from and on behalf of such company, before its funds have become equal to its liabilities as aforesaid, shall forfeit for each offense not exceeding one thousand dollars.

MISSOURI.

No policies of insurance on life hereafter issued by any life insurance company authorized to do business in this State, on and after the first day of August, A. D., 1879, shall, after payment upon it of two full annual premiums, be forfeited or become void by reason of the non-payment of premium thereon, but it shall be subject to the following rules of commutation, to wit: The net value of the policy, when the premium becomes due and is not paid, shall be computed upon the American Experience Table of Mortality, with four and one-half per cent. interest per annum, and after deducting from three-fourths of such net value any notes or other indebtedness to the company, given on account of past premium payments on said policy issued to the insured, which indebtedness shall then be canceled, the balance shall be taken as a net single premium for temporary insurance for the full amount written in the policy, and the term for which such temporary insurance shall be in force shall be determined by the age of the person whose life is insured at the time of default of premium and the assumption of mortality and interest aforesaid; but if the policy shall be an endowment, payable at a certain time, or at death, if it should occur previously, then if what remains as aforesaid shall exceed the net single premium of temporary insurance for the remainder of the endowment term for the full amount of the policy, such excess shall be considered as a net single premium for a pure endowment of so much as such premium will purchase, determined by the age of the insured at date of defaulting the payment of premium on the original policy, and the table of mortality and interest as aforesaid, which amount shall be paid at end of the original term of endowment, if the insured shall then be alive.

At any time after the payment of two or more full annual premiums, and not later than sixty days from the beginning

of the extended insurance provided in the preceding section, the legal holder of the policy may demand of the company, and the company shall issue, its paid-up policy, which, in case of an ordinary life policy, shall be for such an amount as the net value of the original policy at the age and date of lapse, computed according to the Actuaries' or Combined Experience Table of Mortality, with interest at the rate of four per cent. per annum, without deduction of indebtedness on account of said policy, will purchase, applied as a single premium upon the table rates of the company; and in case of a limited payment life policy, or of a continued payment endowment policy, payable at a certain time, or at death, it shall be for an amount bearing such proportion to the amount of the original policy as the number of complete annual premiums actually paid shall bear to the number of such annual premiums stipulated to be paid: Provided, that from such amount the company shall have the right to deduct the net reversionary value of all indebtedness to the company on account of such policy; and provided further, that the policyholder shall, at the time of making demand for such paid-up policy, surrender the original policy, legally discharged, at the parent office of the company.

If the death of the insured occur within the term of temporary insurance covered by the value of the policy as determined in section 5856, and if no condition of the insurance other than the payment of premiums shall have been violated by the insured, the company shall be bound to pay the amount of the policy, the same as if there had been no default in the payment of premium, anything in the policy to the contrary notwithstanding: Provided, however, that notice of the claim and proof of the death shall be submitted to the company in the same manner as provided by the terms of the policy within ninety days after the decease of the insured; and provided also, that the company shall have the right to deduct from the amount insured in the policy the amount compounded at six per cent. interest per annum of all the premiums that had been forborne at the time of the decease, including the whole of the year's premium in which the death occurs, but such premiums shall in no case exceed the ordinary life premium for the age at issue, with interest, as last aforesaid.

The three preceding sections shall not be applicable in the following cases, to wit: If the policy shall have been issued by any company authorized to do business in this State, and organized under the laws of another State of the United States, which prescribes a surrender value or paid-up or temporary insurance in case of default in payment of premiums, and shall contain an agreement for such surrender value, temporary or paid-up insurance, as prescribed by such other State as a part of said policy, or if the policy shall contain a provision for an unconditional cash surrender value at least equal to the net single premium for the temporary insurance provided hereinbefore, or for the unconditional commutation of the policy for non-forfeitable paid-up insurance, or if the legal holder of the policy shall, within sixty days after default of premium, surrender the policy and accept from the company another form of policy, or if the policy shall be surrendered to the company for a consideration adequate in the

judgment of the legal holder thereof, then, and in any of the foregoing cases, this act shall not be applicable: Provided, that in no instance shall a policy be forfeited for non-payment of premiums after the payment of three annual premiums thereon; but in all instances where three annual premiums shall have been paid on a policy of insurance, the holder of such policy shall be entitled to paid-up insurance, the net value of which shall be equal to that provided for in section 5856 of this article.—Revised statutes, 1889, secs. 5856-7-8 and sec. 5859 as amended in 1895.

CHAPTER XI.

CLASS C.—THE NEW YORK INSURANCE LAW.—THREE EXAMPLES OF MATURED ENDOWMENTS.—A REMARKABLE LIFE INSURANCE LAW.—EXAMPLE IN ILLUSTRATION.—ASSUMED EXAMPLE OF A TONTINE POLICY.—ACTUAL EXAMPLES OF MATURED TONTINE POLICIES.

C CLASS.

This class embraces all companies doing business under the Level Premium System, whose policies, in the main, are *not* Non-Forfeitable; that is to say, their policy-holders have *to do something*, WITHIN A SPECIFIED TIME, if payment of premiums be discontinued after the first two or three years, to protect their equities in the reserve and surplus accumulations on the ordinary forms of policies. It includes the companies generally who issue policies in which the deferred dividend element predominates to a greater or less extent. Investment, combined with Cheap Life Insurance, is a prominent idea with the companies in this class.

The dividends paid by the leading companies of this class, with rare exceptions, if any, on the same kind of policies—other things being equal—, are larger than those paid by leading companies in the other classes, because their policies **are forfeitable**; and, generally, any grade of companies in this class can pay larger dividends than can the same grade of companies in the other classes, for the *same reason*. Every policy-holder insured in this class of companies *must attend to the prompt payment of his premium*, ON OR BEFORE 12 O'CLOCK NOON, of the day when it becomes due, or he will be liable to a greater or less loss, according to the kind and amount of his policy, and the length of time it has been in force!

THE NEW YORK LIFE INSURANCE LAW.—On the second of May, 1879, the Legislature of the State of New York passed what has been called, in some of our insurance literature, "*The non-forfeiture law of New York.*" The following is the law, and we have italicised such clauses as serve to make it *wholly useless* as a **non-forfeiture act.**

"SECTION 1.—Whenever any policy of life insurance hereafter issued by any company organized or incorporated under the laws

of this State, after being in force three full years, shall by its terms lapse or become forfeited for the non-payment of any premium, or of any note given for a premium, or loan made in cash on the policy as security, or of any interest on such note or loan, *unless the provisions of this act are specifically waived in the application, and notice of such waiver written in red ink on the margin of the face of the policy when issued,* the reserve on such policy, including dividend additions, calculated at the date of the failure to make any of the payments above described, according to the American Experience Table of Mortality, and with interest at the rate of four and a half per cent. per annum, after deducting any indebtedness of the insured on account of any annual, semi-annual or quarterly premium then due; and any loan in cash on such policy, evidence of which is acknowledged by the insured in writing, *shall, on demand made, with surrender of the policy within six months after such lapse,* be taken as a single premium of life insurance at the published rates of the company at the time the policy was issued, and shall be applied, as shall have been agreed in the application and policy, either to continue the insurance of the policy in force at its full amount, so long as such single premium will purchase temporary insurance for that amount, at the age of the insured at the time of lapse, or to purchase upon the same life, at the same age, paid-up insurance payable at the same time, and under the same conditions except as to payment of premiums, as the original policy. Provided, that if no such agreement be expressed in the application and policy, the said single premium may be applied in either of the modes above specified, at the option of the owner of the policy; *notice of such option to be contained in the demand hereinbefore required to be made to prevent the forfeiture of the policy.* Provided, also, that the net value of the insurance given for such single premium under this section, computed by the standard of this State, shall in no case be less than two-thirds of the entire reserve after deducting the indebtedness as specified; but such insurance shall not participate in the profits of the company.

"SEC 2.—If the reserve upon any endowment policy, applied according to the preceding section as a single premium of temporary insurance, be more than sufficient to continue the insurance to the end of the endowment term named in the policy, and if the insured survive the term, the excess shall be paid in cash at the end of such term, on the conditions on which the original policy was issued.

"SEC. 3.—This act shall take effect on the first day of January, 1880."

By the revision of the Insurance Code in 1892 the phraseology of the law was slightly changed, without, however, affecting its general tenor. The law now reads:

Whenever any policy of life insurance issued after January 1, 1880, by any domestic life insurance corporation, after being in force three full years, shall, by its terms, lapse or become forfeited for the non-payment of any premium or any note given for a premium or loan made in cash on such policy as security, or of any interest on such note or loan, the reserve on such policy computed according to the American Experience Table of Mortality at the rate of four and one-half per cent. per annum shall, on demand made, with surrender

of the policy within six months after such lapse of forfeiture, be taken as a single premium of life insurance at the published rates of the corporation at the time the policy was issued, and shall be applied, as shall have been agreed in the application or policy, either to continue the insurance of the policy in force at its full amount so long as such single premium will purchase temporary insurance for that amount, at the age of the insured at the time of lapse or forfeiture, or to purchase upon the same life at the same age paid-up insurance payable at the same time and under the same conditions, except as to payment of premiums, as the original policy. If no such agreement be expressed in the application or policy, such single premium may be applied in either of the modes above specified at the option of the owner of the policy, notice of such option to be contained in the demand hereinbefore required to be made to prevent the forfeiture of the policy.

The reserve hereinbefore specified shall include dividend additions calculated at the date of the failure to make any of the payments above described according to the American Experience Table of Mortality with interest at the rate of four and one-half per cent per annum, after deducting any indebtedness of the insured on account of any annual or semi-annual or quarterly premium then due, and any loan made in cash on such policy, evidence of which is acknowledged by the insured in writing.

The net value of the insurance given for such single premium under this section, computed by the standard of this State, shall in no case be less than two-thirds of the entire reserve computed according to the rule prescribed in this section, after deducting the indebtedness as specified; but such insurance shall not participate in the profits of the corporation.

If the reserve upon any endowment policy applied according to the provisions of this section as a single premium of temporary insurance be more than sufficient to continue the insurance to the end of the endowment term named in the policy, and if the insured survive that term, the excess shall be paid in cash at the end of such term, on the conditions on which the original policy was issued.

This section shall not apply to any case where the provisions of the section are specifically waived in the application, and notice of such waiver is written or printed in red ink on the margin of the face of the policy when issued.

In addition to New York the legislatures of three other States have passed laws relating to non-forfeiture, which may be classed in the same category as that State, in that they require some action on the part of the insured before becoming effective. The States referred to are: California, Colorado and New Jersey; the laws being as follows:

CALIFORNIA.

Every contract or policy of insurance hereafter made by any person or corporation organized under the laws of this State, or under those of any other State or country, with and

upon the life of a resident of this State, and delivered within this State, shall contain, unless specifically contracted between the insurer and the insured for tontine insurance or for other paid-up insurance, a stipulation that when, after three full annual premiums shall have been paid on such policy, it shall cease or become void solely by the non-payment of any premium when due, its entire net reserve, by the American Experience Mortality, and interest at four and one-half per cent. yearly, less any indebtedness to the company on such policy, shall be applied by such company as a single premium, at such company's published rates in force at the date of original policy, but at the age of the insured at time of lapse, either to the purchase of non-participating term insurance for the full amount insured by such policy, or upon the written application by the owner of such policy, and the surrender thereof to such company within three months from such non-payment of premium, to the purchase of a non-participating paid-up policy, payable at the time the original policy would be payable if continued in force; both kinds of insurance to be subject to the conditions, except as to payment of premiums, as those of the original policy. It may be provided, however, in such stipulation, that no part of such term insurance shall be due or payable unless satisfactory proofs of death be furnished to the insuring company within one year after death, and that, if death shall occur within three years after such non-payment of premium, and during such term of insurance, there shall be deducted from the amount payable the sum of all the premiums that would have become due on the original policy if it had continued in force. If the reserve on endowment policies be more than enough to purchase temporary insurance, as aforesaid, to the end of the endowment term, the excess shall be applied to the purchase of pure endowment insurance, payable at the end of the term, if the insured be then living. If any life insurance corporation or company shall deliver to any person in this State a policy of insurance upon the life of any person residing in this State, not in conformity with the provisions of this section, the right of such corporation or company to transact business in this State shall thereupon and thereby cease and determine, and the Insurance Commissioner shall immediately revoke the certificate of such corporation or company authorizing it to do business in this State, and publish such revocation, daily, for the period of two weeks, in two daily newspapers, one published in the city of San Francisco, and the other in the city of Sacramento.—Law of 1880.

Note that while this law provides for extended insurance automatically, its effect is nullified by admitting of special agreement as to what shall be granted.

COLORADO.

All life insurance companies, authorized to transact business in this State, shall provide in their policies that, after three or more annual premiums have been paid upon a policy of life insurance, and default is made in payment of any subsequent premiums when due, then, notwithstanding such

default, the company shall convert the same into a paid-up policy for as many dollars as the value of such policy will purchase, to be determined by the table of surrender values in use by such company at the time of the issue of policy, which shall not be less than the full net value of the policy per Actuaries' Experience Table of Mortality, four per cent interest; provided, that the application be made in writing for such paid-up policy by the assured within six months after default in the payment of premiums shall first have been made.—Sec. 9, chap. 2, law of 1883.

NEW JERSEY.

1. Whenever any policy of life insurance hereafter issued by any domestic life insurance corporation of this State, after being in force three full years, shall, by its terms, lapse or become forfeited for the non-payment of any premium or any note given for a premium or loan made in cash on such policy as security, or of any interest on such a note or loan, the net reserve on such policy, including existing dividend additions, computed according to the American Experience Table of Mortality at the rate of four and one-half per centum per annum, shall, on demand made in writing, with the surrender of the policy within three months after such lapse or forfeiture, be taken as a single premium of life insurance at the published rates of the corporation at the time the policy was issued, and shall be applied, as shall have been agreed in the application or policy, either to continue the insurance of the policy in force at its full amount, including dividend additions, so long as such single premium will purchase temporary insurance for that amount at the age of the insured at the time of the lapse or forfeiture, or to purchase upon the same life, at the same age, paid-up insurance, payable at the same time and under the same conditions, except as to payments of premiums, as the original policy; if no such agreement be expressed in the application or policy, such single premium may be applied in either of the modes above specified, at the option of the owner of the policy, notice of such option to be contained in the demand hereinafter required to be made to prevent the forfeiture of the policy.

2. If there be any indebtedness on the policy which has been acknowledged by the assured in writing, such indebtedness shall be paid off in cash before the provisions of this act shall be applicable to the policy.

3. The net value of the insurance given for such single premium under this act, computed according to the American Experience Table of Mortality, with interest at the rate of four and one-half per centum per annum, shall in no case be less than two thirds of the entire reserve, computed according to the rule prescribed in this act; but such insurance shall not participate in the profits of the corporation.

4. If the reserve upon any endowment policy applied according to the provisions of this act as a single premium of temporary insurance be more than sufficient to continue the insurance to the end of the endowment term named in the policy, and if the insured survive that term, the excess shall be paid in cash at the end of such term, on the conditions on which the original policy was issued.

5. Any policy issued by any insurance company of this State shall be incontestable after two years from its date of issue provided all due premiums have been paid, except that such policy may be adjusted for misstatement of age in the application for original policy.

6. On policies of prudential or industrial insurance, the paid-up value of which, in accordance herewith, shall be less than fifty dollars, it shall be optional with the company issuing such policy to pay to the legal holder or holders thereof the cash equivalent; and upon such payment the company shall be absolutely released from all further claims or demands whatsoever under or by reason of said policy, which shall thereupon be canceled.

7. The provisions of this act shall not apply to policies issued on the lives of persons under twelve years of age until three years after such persons shall attain that age.

8. All acts or parts of acts inconsistent with this act be and the same are hereby repealed.—Act of 1895.

The following are examples of policies issued by one of the most prominent companies of the **O. class.** The results speak for themselves:

POLICY No. 49,138; AMOUNT, $2,000; DATE, JULY 11, 1866; AGE, 26; KIND OF POLICY, 19-YEAR ENDOWMENT REQUIRING NINETEEN ANNUAL PAYMENTS OF $93.84, EACH.

The Company paid, July 11, 1885	$2,000.00
And dividend additions	758.90
Total paid by Company	2,758.90

The insured paid $93.84 per year for 19 years—of which $86.05 per annum was made to earn, by the Company, five per cent. compound interest, principle and interest amounting to exactly $2,759.68, a trifle more than the sum paid on maturity of endowment. The difference between $93.84 and $86.05, which is $7.79, was the annual cost of the insurance!

(The above premium was paid in two equal semi-annual payments of $46.92, each.

POLICY No. 99,074; AMOUNT, $3,000; DATE, JUNE 28, 1869; AGE, 25; KIND OF POLICY, 15-YEAR ENDOWMENT REQUIRING FIFTEEN ANNUAL PAYMENTS OF $198.06, EACH.

The company paid, June 28, 1884	$3,000.00
And dividend additions	1,030.32
Total paid by company	$4,030.32

The insured paid $198.06 per year for 15 years—of which $177.90 per annum was made to earn, by the company, five per cent. compound interest, principle and interest amounting to $4,030.77, a few cents more than the sum paid on maturity of endowment. The difference between $198.06 and $177.90, which is $20.16, was the annual cost of the insurance!

POLICY No. 156,482; AMOUNT, $5,000; DATE, MAY 6, 1874; AGE, 25; KIND OF POLICY, 10-YEAR ENDOWMENT REQUIRING TEN ANNUAL PAYMENTS OF $540.40, EACH.

The Company paid, May 6, 1884	$5,000.00
And dividend additions	1,066.55
Total paid by Company	$6,066.55

The insured paid $540.40 per annum for 10 years, of which $459.36 per annum was made to earn, by the Company, five per cent. compound interest, principle and interest amounting to exactly $6066.66, a trifle more than the sum paid on maturity of the endowment. The difference between $540.40 and $459.36, which is $81.04, was the annual cost of the insurance!

(The above premium was paid in two equal semi-annual payments of $270.20 each.

A very remarkable Life Insurance Law.—In 1868 a very remarkable statute was enacted by the Legislature of Iowa, intended as a complete protection of the reserves of policy holders who insure in companies organized under it, against the possible dishonesty and mal-feasance of Life Insurance officials. The law is as follows:

SEC. 1169, chap. 5, of the Laws of Iowa (code of 1873).—"As soon as practicable after the filing of said statement of any company organized or doing business under the laws of this State, in the office of the Auditor of State, he shall proceed to ascertain the net cash value of each policy in force, upon the basis of the American Experience Table of Mortality, and four and a-half per cent. interest, or the Actuaries' Combined Experience Table of Mortality, with interest at four per cent. * * * For the purpose of making such valuations, when not already made as aforesaid, the auditor may employ a competent actuary to do the same, who shall be paid by the company for which the service was rendered; but nothing herein shall prevent any company from making said valuation herein contemplated, which shall be received by the auditor upon such proof as he may determine. Upon ascertaining the net cash value of policies in force in any company organized under the laws of this State, or doing business in this State, and which has not made the deposit required in Section 1164 of this chapter"—(refers to the requirements of the States under whose laws the foreign companies were incorporated)—"the auditor shall notify said company of the amount, and within thirty days after the date of such notification the officers of such company shall deposit with the auditor the amount of such ascertained valuation of all policies within this State in the securities described in section 1179 of this chapter."

RESERVE DEPOSIT feature of the foregoing law; to illlustrate this we give the following example of a policy in force:

POLICY, No. 1857; AMOUNT, $3,000; AGE, 18; DATE OF POLICY, MARCH 14, 1874; KIND OF POLICY, ORDINARY LIFE REQUIRING THE PAYMENT OF $26.78, SEMI-ANNUALLY, DURING LIFE.

On this policy the dividends have been applied to the purchase of paid-up additions.

Dividend, 1875, end 1st year, 19.9 per cent. of annual premium	$10.68
Paid-up addition to policy	40.52
Dividend, 1876, end 2d year, 25.5 per cent. of annual premium	$13.71
Paid-up addition to policy	51.82
Dividend, 1877, end 3d year, 26.3 per cent. of annual premium	$14.12
Paid-up addition to policy	52.38
Dividend, 1878, end 4th year, 27.9 per cent. of annual premium	$14.98
Paid-up addition to policy	54.52
Dividend, 1879, end 5th year, 29.9 per cent. of annual premium	$16.06
Paid-up addition to policy	57.35
Dividend, 1880, end 6th year, 30.8 per cent. of annual premium	$16.54
Paid-up addition to policy	57.90
Dividend, 1881, end 7th year, 32.8 per cent. of annual premium	$17.60
Paid-up addition to policy	60.45
Dividend, 1882, end 8th year, 34.6 per cent. of annual premium	$18.55
Paid-up addition to policy	62.55
Dividend, 1883, end 9th year, 36 per cent. of annual premium	$19.50
Paid-up addition to policy	64.35
Dividend, 1884, end 10th year, 37.9 per cent. of annual premium	$20.35
Paid-up addition to policy	65.70
Dividend, 1885, end 11th year, 40 per cent. of annual premium	$21.46
Paid-up addition to policy	68.00
Total additions in 11 years	$635.54
Total premiums paid in 11 years	589.16
Excess of additions over premiums paid	$46.38

Remark—At the end of the 11th policy year the reserve of policy and additions, according to the Actuaries' Table, and 4 % interest, the standard required by the State, amounted to $415.94! This amount, according to the preceding law, is now deposited in the office of the State Auditor, in securities prescribed by legislative enactment.

DEPOSIT LAW OF INDIANA.

In the year 1899 the Indiana legislature passed an act regulating life insurance in that State, which includes the following section relating to compulsory deposit of the reserves:

SEC. 10.—As soon as practicable, after the filing of said annual statement of any company organized and doing business under the provisions of this act, in the office of the Auditor of State, he shall proceed to ascertain the net cash value of each policy in force on the 31st day of December

immediately preceding, upon the basis of the American Experience Table of Mortality and four per cent. interest, or Actuaries' Combined Experience Table of Mortality and four per cent. interest. For the purpose of making such valuations, the Auditor of State may employ a competent actuary to do the same, who shall be paid by the company for which the services are rendered; but nothing herein shall prevent any company from making said valuation herein contemplated, which may be received by the Auditor of State upon such proof as he may determine. Upon ascertaining in the manner above provided, the net cash value of all policies in force in any company organized or doing business under this act, the Auditor of State shall notify said company of the amount thereof and within ninety days after the date of such notification the officers of such company shall deposit with the Auditor of State for the security and benefit of its policyholders, an amount which, together with the sum already deposited with said officer, snall be not less than the amount of such ascertained valuation of all policies in force in the securities described in section twenty-two of this act, or in certificates of deposit in any solvent bank or trust company. But no company organized under this act shall be required to make such deposit until the cash value of the policies in force as ascertained by the Auditor of State exceeds the amount deposited by said company under sections five or six hereof.

The following is an assumed example of a Deferred Dividend policy, with ordinary life premium rate:

AMOUNT OF POLICY, $10,000; ANNUAL PREMIUM, $226.30; AGE AT ISSUE, 30; KIND OF POLICY, ORDINARY LIFE; DIVIDEND PERIOD, 20 YEARS.

Year.	Annual Premium.	Reserve at 4 per cent. Actuaries.	Year.	Annual Premium.	Reserve at 4 per cent. Actuaries
1st	$ 226.30	$ 93.07	11th	$ 226.30	$1,207.70
2d	226.30	189.14	12th	226.30	1,340 62
3d	226.30	288.28	13th	226.30	1,477.91
4th	226.30	390.60	14th	226.30	1,619.25
5th	226.30	496.29	15th	226.30	1,764.19
6th	226.30	605.40	16th	226.30	1,912.50
7th	226.30	718 04	17th	226.30	2,063.61
8th	226 30	834.53	18th	226 30	2,217.47
9th	226.30	954 81	19th	226.30	2,373.88
10th	226.30	1,079.13	20th	226.30	2,532 94

Let it be assumed that a person at age 30 has under consideration the investment in such a policy as above described, and that he is quite favorably inclined to close the contract. Before doing so, however, he should be quite sure that he understands it. What does the *insured*, under the contract, promise to do? The contract lived up to on the part of the insured, what does the *company* promise to do? The insured promises to pay to the company $226.30, every year, during his natural life, and to

live up to all the other requirements of the policy contract as to occupation, residence, habits, etc., etc., and the company agrees to pay $10,000, in cash, soon after his death, to the beneficiary or beneficiaries named in the policy. It is a simple, straight, Ordinary Life Policy contract—*with this addition:*

During the first twenty years the insured agrees to pay the $226.30 per year, *in full.* He is to receive no dividends during that period. If he die during the twenty years, the company agrees to pay the face value of the policy, only. If the insured live only one single day less than the entire twenty years from date of policy, having paid twenty full annual premiums, in cash, only the face value of the policy will be paid. He must not only pay twenty annual premiums but he must also live twenty entire years, from date of contract, and fulfil all the other conditions of the policy contract, before he will be entitled to any dividends whatever. This twenty years is called The Dividend Period.

During the Dividend Period, all the dividends that he might have received, and used, in annual reduction of premiums, had the policy not been a deferred dividend contract, are accumulating in the surplus fund, and are being compounded, annually, at the average rate of interest, from year to year, realized by the company on all its invested funds. These dividend accumulations, from his own policy, are not placed to his individual credit on the books of the company—they may be kept in memoranda—but they are credited to the general surplus fund of his class.

If the policy were an Ordinary one, not a Deferred Dividend, and the dividends were to average, say, $75.44 per annum, and were left with the company to be compounded annually at five per cent. interest, at the end of the twenty years they would amount to $2,619.20. This would be the entire amount of his dividends, from all sources, under the assumptions made.

How much would the above result be increased if the policy were a Deferred Dividend, and the insured were to persist in living and paying, and complying with all the other conditions of the contract, until the expiration of the twenty-year period? Of course no one can answer this question, not even the companies themselves, except approximately. One company estimated the amount of surplus at the end of the dividend period, on the kind and amount of policy assumed, at $3,256.70. This is $637.50 more than the estimated surplus, if the policy were an annual dividend contract. Another estimated the surplus at $4,697,.00; or, $2,077.80 more than if it were an annual dividend contract. The first of the above

companies, in its sworn testimony before the Ohio Senate Committee, stated that the surplus, at the end of the tenth year, on a $3,000 policy in that company, issued at age thirty-one, was $269.79; that the dividends paid on the same kind of an annual dividend policy, same amount and age, during first ten years, compounded at six per cent., amounted to only $141.42, showing a difference in favor of the first-named policy of $128.37, or ninety-one per cent., end of the first ten years. Taking the statement thus sworn to by the company, as the basis of estimates for the entire dividend period, we have the following: The estimated dividends on an annual dividend contract, as stated before, amount to $2,619.20. Add ninety-one per cent. and the result is $5,002.67, the estimated surplus at the end of the dividend period; but this result far exceeds the estimates of any company, on this kind of policy, showing plainly that either our assumptions of the dividends are too high on an annual dividend policy in that company, or that the dividends would not average as large during the entire twenty-year dividend period as they did the first ten years of that period.

Now let it be assumed that the policy-holder in our assumed example has lived through the twenty-year dividend period. What are the advantages over a similar annual dividend policy, at the end of the first twenty years?

1. If the policy were an annual dividend in the same company, he would have to apply to the company to ascertain how much cash, or how large a paid-up policy, would be given on surrender of the original policy. This application would have to be made before the twenty-first annual premium became due, or the policy would lapse. It must be attended to *promptly*. The company has, in the reserve accumulations, $2,532.94, and we have assumed that the accumulated dividends amount to $2,619.20, making, altogether, $5,152.14, in cash, to the credit of the policy in the hands of the company—it is an annual dividend policy, remember! How much of this $5,152.14 would the company *probably* pay the insured, in cash, on the *legal* surrender of the policy? *Probably* not more than one-half of it, or thereabouts, say $2,700—possibly, $3,000. If he preferred a *paid up policy* to the cash, he would receive what the $3,000 at his present age would purchase at the company's loaded rate! If the policy were a Deferred Dividend, how much cash, or paid-up, would the company give him upon legal surrender of the original policy? One company guarantees $2,173.90 in cash, but estimates it at $5,680. Its estimated equivalent paid-up is $12,150! Another company guarantees $2,270.05 in cash, but estimates it at $7,120. Its estimated equivalent paid-up is

$16,500! A third guarantees a cash surrender value of $2,532.94, but makes no estimates as to what it can probably do better than this.

It is well to remark here that the guarantee cash surrender values above, are the entire reserves as kept by the several companies, and the *estimated* cash values are these reserves augmented by the estimated surplus. It should further be remarked that when the cash surrender value is sufficient to purchase a larger paid-up policy than the original one, medical examination is required for the *additional* insurance.

(2.) The cash surrender value or equivalent paid-up, at the end of the Dividend period is not the only option on the part of the insured. There are several others, with reference to which the reader is referred to Chapter V of this book.

The following is the history of an early Tontine Policy issued under the original form providing for absolute forfeiture of reserve and surplus in the event of lapse:

Policy No. 44,198; Amount of Policy $10,000; Kind of Policy, Ordinary Life, Tontine Policy; the Tontine Period, 15 Years; Annual Premium, $324.70; Age, 41; Date of Policy, June 8th, 1869.

During the Tontine period of fifteen years, the insured paid fifteen annual premiums, in cash, of $324.70 each, amounting to $4,870.50.

At the end of the Tontine period June 8th, 1884, the insured had the privilege of choosing any one of the following methods of settlement.

I. He could surrender the original policy to the Company, and receive, in cash, $5,530.70. After having had $10,000 insurance for 15 years for *nothing*, he could retire with $660, cash, over and above the total sum he had paid; or,

II. He could surrender the original Policy and receive a Paid-up Policy for $10,260 upon which no further payment of premiums would ever be required; or,

III. He could convert the *surplus*, $2,918.10 into an *annuity for life*, $243.50 per year, and apply it in annual payment of future premiums, thus *continuing* the original policy. This life annuity, of $243.50, would *alone* reduce the annual premium from $324.70 to $81.20, and the *future* annual cash dividends would very *nearly*, if not quite, pay the balance. This was the option accepted by the insured; and, in 1885, the annuity together with the dividend of 1885, *more* than paid the annual premium, so that the company receipted for the annual premium, and *paid the insured $17.20 in cash.*

At the end of the Tontine period, the options, *in percentages*, were as follows:

1. **Cash surrender value of the Policy was 114 per cent. of the total premiums paid!**
2. **Amount of Paid-up Policy was 211 per cent.** of the total premiums paid!
3. The cash surplus was **60 per cent.** of the total premiums paid!

Example of a Matured Tontine.

Policy, No. 114,285; Amount, $10,000; Date, May 7, 1875; Kind of policy, Ordinary Life; Annual premium, $350.50; **Tontine Period, 10 years.**

Results: The insured paid the premiums, in full, during the 10-YEAR TONTINE PERIOD, amounting to $3,505. By the provisions of the policy-contract, at the end of the ten years he was entitled to the benefit of the following options:

1. HE COULD SURRENDER HIS POLICY AND RECEIVE FROM THE COMPANY, IN CASH, $3,036; OR,

2. HE COULD SURRENDER HIS POLICY AND RECEIVE A PAID-UP FOR $6,045, NON-PARTICIPATING; OR,

3. HE COULD SURRENDER HIS POLICY AND RECEIVE AN ANNUITY FOR LIFE OF $258.00, PER YEAR; OR,

4. HE COULD SURRENDER HIS ACCUMULATED SURPLUS, $1,255, CONTINUING HIS POLICY, AND RECEIVE AN ANNUITY FOR LIFE OF $77.00 PER YEAR TO BE USED IN PAYMENT OF FUTURE PREMIUMS.

He selected the *second* of the above options, and reinsured on the Tontine plan, May, 1885.

Our readers must not be misled in comparing the above results with those of the 15-year Tontine preceding it. There is no basis for accurate comparison of the two.

TERMINABLE ENDOWMENTS; RESERVE ENDOWMENTS; A CERTAIN KIND OF LIFE-RATE ENDOWMENTS; FIVE-YEAR DISTRIBUTION POLICIES, ETC., ETC., ARE FORMS OF POLICY-CONTRACTS IN WHICH THE DEFERRED DIVIDEND ELEMENT PREVAILS TO A GREATER OR LESS EXTENT; BUT TO ILLUSTRATE THEM ALL, BY EXAMPLES, WOULD REQUIRE MORE SPACE THAN A WORK OF THIS CHARACTER PERMITS.

The above examples illustrate the workings of the original Tontine contracts. In the following is shown the values endorsed on a modern deferred dividend policy, together with an illustration of the results which would have accrued

had such a policy been issued twenty years ago. Now that the companies have had actual experience with these forms they no longer issue estimates, but submit illustrations of present results, with a warning that future results can only be in accordance with future experience.

Ordinary Life Policy.—Age of insured, 35; amount, $10,000; annual premium, $281.10, payable for life; Accumulation or Dividend Period, twenty years.

TABLE OF CASH LOANS AND OF PAID-UP OR CONTINUED INSURANCE.

After Expiration of	Cash Loans.	Paid-up Insurance.	$10,000 Insurance Continued for	
			Years.	Months.
1 Year.....	....	....	..	2
2 Years	$330	$420	1	4
3 "	450	850	2	8
4 "	630	1,120	4	1
5 "	830	1,410	5	5
6 "	980	1,670	6	6
7 "	1,130	1,950	7	6
8 "	1,290	2,220	8	6
9 "	1,460	2,490	9	5
10 "	1,620	2,820	10	2
11 "	1,790	3,070	10	10
12 "	1,970	3,330	11	4
13 "	2,150	3,600	11	10
14 "	2,330	3,840	12	2
15 "	2,510	4,200	12	5
16 "	2,700	4,450	12	8
17 "	2,890	4,690	12	10
18 "	3,080	4,920	12	11
19 " ...	3,270	5,150	12	11
20 "	3,470	5,370	13	..
21 "	3,660	5,590	12	11
22 "	3,860	5,800	12	9
23 "	4,050	6,000	12	6
24 "	4,250	6,190	12	4
25 "	4,450	6,380	12	1
26 "	4,640	6,560	11	11
27 "	4,840	6,740	11	8
28 "	5,030	6,910	11	5
29 "	5,220	7,070	11	2
30 "	5,410	7,230	10	10

Guaranteed benefits at end of twenty years, (a) cash value, $3,270, or (b) paid-up policy for $5,370, or (c) extended insurance for thirteen years. Estimated dividend at end of twenty years, on basis of results achieved on policies maturing in 1900, $2,660, which would purchase paid-up insurance of $4,300.

CHAPTER XII.

THE NATURAL PREMIUM SYSTEM.—ITS DISTINGUISHING CHARACTERISTICS.—REQUISITES FOR SOUNDNESS AND PERMANENCY.—A LEVEL PREMIUM SEPARATED INTO ITS ELEMENTS.—A NATURAL PREMIUM SEPARATED INTO ITS ELEMENTS.—THE TWO COMPARED.—TABLE A, SHOWING RESERVE AND AMOUNT AT RISK ON A LEVEL PREMIUM POLICY OF $10,000, AGE 40, FOR 27 YEARS.—REMARKS ON THE SAME.—TABLE B, SHOWING RESERVE AND AMOUNT AT RISK ON A NATURAL PREMIUM POLICY OF $10,000, AGE 40, FOR 27 YEARS.—REMARKS ON THE SAME.—TABLE C, SHOWING THE NET AND GROSS NATURAL PREMIUMS FOR $1,000, AGES, 20 TO 99.—REMARKS ON THE SAME.—UNIFORM PERCENTUM LOADING DISCUSSED.

II. THE NATURAL PREMIUM SYSTEM.

While the natural premium system is thoroughly scientific, and therefore perfectly sound, experience has shown that insurers will not pay a continually increasing premium. For temporary insurance the system meets the pressing needs of a great many men, but when the premiums reach a point where they become burdensome, the insurance is promptly dropped. As a matter of fact, no purely natural premium company is operating in the United States at this time, and only a few ordinary or level-premium companies will issue such a contract, and even they require that at age sixty or sometimes earlier, the insured shall change to a whole-life level-premium contract if he still desire insurance.

DISTINGUISHING CHARACTERISTICS:

1. **The premium is required to be paid** *in advance.*

2. **The contract between the company and the insured is called a** *policy.*

3. The policy always designates a definite sum to be paid by the company to the beneficiary or beneficiaries named therein, and the insurance is for one year only, or in some cases a fractional part thereof—two, three or six months—renewable from time to time at the option of the insured, without medical examination.

4. The premium is a "*progressive premium;*" that is, it is larger each successive year than the last preceding one. But the increase in a well managed company is liable to be impeded, somewhat, so that each of the annual payments, during the first five or ten years, in a Mutual Company, may possibly be kept down by dividends to a level, or nearly so, with that of the third, or even the *second* year.

REQUISITES FOR SOUNDNESS AND PERMANENCY.

***a.*—The premium must be based on safe assumptions of future mortality, interest and expenses.**

***b.*—There must be in hand from the first to the end of every policy year, the reserve provided by law.**

To illustrate,—suppose that the insured is 40 years old at the *beginning* of a policy year; that the policy is for $1,000, and that the premium is based on the Actuaries' Table of Mortality, and 4 per cent. interest. (See Table No. 16, col. 6). The net premium at 40 is $9.96, and it is also the required reserve. Bear in mind that *this* is the reserve *at the beginning* of the year; but it gradually diminishes until at the *end* of the year it is nothing! At the beginning of the second year he is 41, and the net premium,—which is also the legal reserve—, is now $10.20, which is also reduced to zero at the end of the year. At the beginning of the sixth year, at age 45, the reserve is $11.74, and nothing at the *end* of the year. At ages 50, 55, 60, 65 and 70, the reserves are, respectively, $15.33, $20.83, $29.17, $42.39, and $62.44, at the *beginning* of each of the several years indicated, but no reserve is required at the terminations of these years. Generally, at the *beginning* of any policy year, the reserve required by law in **The Natural Premium System**, is the net premium at the *then* age; but, at the *end* of any policy year, no matter how long the policy has been in force, no reserve is required. If any remains, at the end of the year, it shows that the mortality of the company during the year has been less than that indicated by the mortality table upon which its premiums are based, and it is placed to the credit of the surplus fund.

***c.*—The premiums should be loaded sufficiently—see "*loading,*" page 26—to provide for any possible mortality, in the future, in excess of that indicated by the mortality table upon which they are based. This surplus fund should be safely invested, and the policy contract should definitely state *how it will* be invested. To every**

policy holder who has been insured a certain number of years, say ten to fifteen, such a proportional part of this special mortality fund as his premiums have contributed thereto, together with interest earned thereon, should be available, annually thereafter, in payment of his premiums. Should death occur, or the policy lapse, or become forfeited, prior to the expiration of the stipulated period, it should be forfeited to the remaining members.

d.—**The necessary expenses of the company should be amply provided for by collecting from every policy-holder—Quarterly, semi-annually or annually, in advance—a uniform fixed amount for each $1,000 of insurance regardless of age. A uniform *per centum* loading of the net premium for expenses in this system of insurance is inequitable.**

e.—**Good management.**

Every life premium, under **The Level Premium System**, is composed of three elements, as follows.—(1) THE RESERVE ELEMENT; (2) THE MORTALITY ELEMENT; (3) THE EXPENSE ELEMENT. Table No. 1 gives these elements of an ORDINARY LIFE PREMIUM, for $1,000 of insurance, at every age from 10 to 99, inclusive, according to THE ACTUARIES' TABLE of Mortality and 4 per cent. interest. These elements are thoroughly discussed in previous pages, commencing at page 65.

Every life premium under **The Natural Premium System** is composed of two elements.—(1) THE MORTALITY ELEMENT—which is also the *reserve*—(2). THE EXPENSE ELEMENT. Table No. 1½ gives these elements of a natural premium, for $1,000 of insurance, at every age from 10 to 99, inclusive, according to THE ACTUARIES' TABLE of Mortality, and 4 per cent. interest.

By comparing col. (1), Table No. 1½, with col. (6), Table No. 16, they will be found to be the same. That is to say, in **The Natural Premium System**, the expressions, *legal reserve*, *natural net premium*, and *mortality element*, when used with reference to the same gross premium, mean *precisely the same*. To illustrate.—The gross natural premium to insure $1,000 for one year, at age 30, is $10.80, reference being had to col (3), Table No. 1½. This premium is composed of the following elements:

1.—MORTALITY ELEMENT	$ 8.10
2.—EXPENSE ELEMENT	2.70
GROSS PREMIUM	$10.80

The *mortality element* ($8.10), at the beginning of the year, is also the *legal reserve*, and the *net premium* to insure $1,000 for

one year. The *mortality element*, the *net premium*, and the *legal reserve* are synonymous terms when applied to the *same gross natural premium*, at the *beginning* of the year, or fractional part thereof designed to be covered by the premium.

To further illustrate the nature and office of the *legal reserve* in **The Natural Premium System**, and in what respect it differs from the *legal reserve* in **The Level Premium System**, let it be assumed that a person, at age 40, insures, the same day, for $10,000 under each system. He has two policies—one is for $10,000 on THE LEVEL PREMIUM PLAN; the other is for $10,000 on THE NATURAL PREMIUM PLAN. He pays, in advance, to the LEVEL PREMIUM company, $315.70, or thereabouts, and to the NATURAL PREMIUM company, say, $132.80.

THE LEVEL PREMIUM is made up of the following elements:

(1.).—THE RESERVE ELEMENT.....	$138.60
(2.).—THE MORTALITY ELEMENT.....	98.20
(3.).—THE EXPENSE ELEMENT.....	78.90
Gross Level Premium.....	**$315.70**

THE NATURAL PREMIUM is made up of the following elements:

(1.).—THE LEGAL RESERVE or THE MORTALITY or THE NET ANNUAL PREMIUM Element....	$ 99.60
(2.).—THE EXPENSE Element.....	33.20
Gross Natural Premium.....	**$132.80**

The "*Expectation of life*," at 40, is a fraction over 27 years; call it 27, even. The two following tables, A and B, show very clearly the difference between the *legal reserve* of a **Level Premium** and the *legal reserve* of a **Natural Premium**, both as to the offices they perform, and the results as shown in the amounts of insurance in force from year to year respectively.

TABLE A.

Showing the legal reserve, and the amount of Insurance at risk, at the beginning, and, also, at the end of each year, on a Ten Thousand Dollar Ordinary Life Policy issued at Age 40, under the Level Premium System.

	Beginning of each Policy Year.		End of each Policy Year.	
AGE.	Legal Reserve, Actuaries' 4 per cent.	Amount of Insurance, at risk.	Legal Reserve, Actuaries' 4 per cent.	Amount of Insurance, at risk.
	Col. 1.	Col. 2.	Col 3.	Col. 4.
40	$236.80	$9,763.20	$144.12	$9,855.88
41	380.92	9,619.08	293.13	9,706 87
42	529.93	9,470.07	447.02	9,552.98
43	683.82	9,316.18	605.47	9,394.55

TABLE A.—Continued.

Age.	Beginning of each Policy Year.		End of each Policy Year.	
	Legal Reserve, Actuaries' 4 per cent.	Amount of Insurance, at risk.	Legal Reserve, Actuaries' 4 per cent.	Amount of Insurance, at risk.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.
44	842.25	9,157.75	767.93	9,232.07
45	1,004.73	8,995.27	934.17	9,065.83
46	1,170.97	8,829.03	1,103.57	8 896.43
47	1,340.37	8,659.63	1,276.04	8,723.96
48	1,512.84	8,487.16	1,451.38	8,548.62
49	1,688.18	8,311.82	1,629.67	8,370.33
50	1,866.47	8,133.53	1,810.60	8,189.40
51	2,047.40	7,952.60	1,993.98	8,006.02
52	2,230.78	7,769.22	2,179.61	7,820.39
53	2,416.41	7,583.59	2,367.31	7,632.69
54	2,604.11	7,395.89	2,557.01	7,442.89
55	2,793.81	7,206.19	2,748.48	7,251.52
56	2,985.28	7,014.72	2,941.44	7,058.56
57	3,178 24	6,821.76	3,135·93	6,864.07
58	3,372.73	6,627.27	3,331.67	6,668.33
59	3,568.47	6,431.53	3,528.39	6,471.61
60	3,765.19	6,234.81	3,725.41	6,274.59
61	3,962.21	6,037.79	3,922.48	6,077.52
62	4,159.28	5,840.72	4,119.10	5,880.90
63	4,355.90	5,644.10	4,314.98	5,685.02
64	4,551.78	5,448.22	4,509.67	5,490.33
65	4,746.47	5,253.53	4,702.89	5,297.11
66	4,939.69	5,060.31	4,894.04	5,105.96
67	5,130.84	4,869.16	5,083.95	4,917.05

NOTE 1.—The *legal reserve*, at the *beginning* of the *first* policy year, after payment of *first* annual premium, is $236.80. which is also the net annual premium—see Col. (1) above. The amount of insurance, *at risk*, at this time, see Col. (2), is the face of the policy, $10,000, less the *legal reserve*, $236.80, or $9,763.20! The *legal reserve* at the *end* of the first policy year, is $144.12, see Col. (3), and the amount of insurance, *at risk*, at this time, is the face value of the policy, $10,000, less the *legal reserve*, $144.12, or $9,855.88. The *legal reserve*, at the *beginniny* of the *second* policy year, age 41, is the *legal reserve* at the end of the last preceding year, $144.12, added to the net annual premium, at 40, $236.80, or $380.92. The amount *at risk*, at the beginning of the second policy year, is the face value of the policy, $10,000, less the *legal reserve*, $380.92, or $9,619.08. The *legal reserve* at the *end* of the *second* year is $293.13, and the amount of insurance, *at risk*, is the face value of the policy, less the legal reserve, or $9,706.87; and so on.

NOTE 2.—It will be noticed that the *legal reserve* at the *beginning* of any policy year is larger than at the *end* of the *same* year; compare Col. (1) with Col. (3). This is owing to the fact that the *legal reserve* at the beginning of every year is made up of the *legal reserve* at the end of the last preceding year increased

by the *net annual premium*, which latter contains the *mortality* element used in payment of current death losses, during the year.

NOTE 3.—If the insured were to die, immediately after the payment of his first annual premium, the *company* would pay $10,000. This $10,000 would be raised from two sources, (1) the *legal reserve*—$236.80—and (2) $9,763.20 from the mortality elements of all the premiums of *surviving* policy-holders. In other words, the insured, *himself*, would pay $236.80 of his own policy If the insured were to die at the *end* of the first policy year, before paying his second annual premium, he would contribute $144.12 toward the payment of his own policy, and the balance, $9,855.88, would come from the mortality elements of the surviving policy-holders' premiums. By looking along down Col. (1), from age 40 to 67, inclusive, it will be seen how much the insured would contribute to the payment of his own policy, if death were to occur at the beginning of any policy year; and, by examining the amounts in Col. (3), it may be seen what would be contributed, by a policy-holder, insured for $10,000, at age 40, toward the payment of his **own death claim**, should death occur at the *end* of any policy year named.

NOTE 4.—As has been said in preceding pages, over and over again, the **legal reserve** under **the Level Premium System** means **accumulation**! In the above example, the *legal reserve* at the *end* of the first policy year, is $144.12; at the *end* of the *fifth* policy year, it is $767.93; at the end of the tenth policy year, age 49, it is $1,629.67, and so on, through the entire 27 years of the policy-holders' expectancy—and as much longer as the policy is kept in force—continually *increasing*. When the insured attains the age of 67, having lived out the full average of life, and *paid his full share of death losses and expenses* **thus far**, the company still has in its possession $5,082.95, in the legal reserve, not one single penny of which can be used, lawfully, in payment of the current death losses or expenses, until the policy on which it is accumulated matures by death. The policy-holder, under this assumed example, although the policy is $10,000, and it is spoken of as being $10,000 **of insurance**, is *never* insured for $10,000! At the end of the first year his insurance is the **amount at risk**, or $9,855.88, and this is the largest amount of insurance he can ever have under this policy contract, unless *dividends* be used in purchase of additions to the policy. At the end of 27 years he has only $4,917.05 of insurance. If he were to live and keep his policy in force 33 years longer, until the age of 100, the *legal reserve* would then just equal the face value of the policy, and he would have not one penny of insurance; or, to state it in another way, he would have paid for his insurance in full and the company holding his money would have nothing at risk.

NOTE 5.—It should be constantly kept in mind, when looking over the above table, that the maximum amount that the insured can ever be called upon to pay, in any one year, is the **gross annual premium** named in the contract, which, in this assumed case, is $315.70. It may be *less*, but it can never be *more*. If the company's mortality be less than that indicated by THE ACTUARIES' TABLE OF MORTALITY, there will be a dividend that can be used in reduction of this premium. If the Company realize more than 4 per cent. interest on the reserves in Col. (3), there will be a dividend from *that* source. If the expense element be not all used from year to year, a dividend will arise from that source. Chapter VII. explains, in detail, the principal sources of dividends under The Level Premium System.

It should also be borne in mind, in this connection, that every policy-holder under **The Level Premium System** pays his share of the death losses, in proportion to the amount of risk the company is carrying on him. The amount of insurance at risk continually diminishes as the amount of legal reserve increases.

NOTE 6.—At age 40, the actual cost to the company, according to THE ACTUARIES' TABLE OF MORTALITY AND 4 PER CENT. INTEREST—see Table No. 16—to carry $10,000 of insurance, one year, is $99.60; at age 67, it is $494.90, or nearly five times as much as at 40! Were no reserve kept in hand to reduce the amount of insurance *at risk*, under THE LEVEL PREMIUM SYSTEM, the annual rate of premiums would necessarily *increase*.

TABLE B.

Showing the legal reserve, and the amount of Insurance, at risk, at the beginning, and, also, at the end of each year, on a Ten Thousand Dollar Life Policy issued at Age 40, under the Natural Premium System.

	Beginning of each Policy Year.		End of each Policy Year.	
Age.	Legal Reserve, Actuaries' 4 per cent.	Amount of Insurance at risk.	Legal Reserve, Actuaries' 4 per cent.	Amount of Insurance at risk.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.
40	$99.60	$9,900.40	Nothing.	$10,000
41	102.00	9,898.00	Nothing.	10,000
42	104.80	8,955.20	Nothing.	10,000
43	108.20	9,891.80	Nothing.	10,000
44	112.50	9,887.50	Nothing.	10,000
45	117.40	9 882.60	Nothing,	10,000
46	123.50	9,876.50	Nothing.	10,000
47	130.00	9,870.00	Nothing.	10,000
48	137.10	9,862.90	Nothing.	10,000
49	144.80	9,855.20	Nothing.	10,000
50	153.30	9,846.70	Nothing.	10,000
51	162.50	9,837.50	Nothing.	10,000
52	172.60	9,827.40	Nothing.	10,000
53	183.60	9,816.40	Nothing.	10,000
54	195.30	9,804.70	Nothing.	10,000
55	208.30	9,791.70	Nothing.	10,000
56	222.40	9,777.60	Nothing.	10,000
57	237.30	9,762.70	Nothing.	10,000
58	253.70	9,746.30	Nothing.	10,000
59	271.60	9,728.40	Nothing.	10,000
60	291.70	9,708 30	Nothing.	10,000
61	313.60	9,686.40	Nothing.	10,000
62	337.70	9,662.30	Nothing.	10,000
63	363.80	9,636.20	Nothing,	10,000
64	392.60	9,607.40	Nothing.	10,000
65	423.90	9,576.10	Nothing.	10,000
66	457.80	9,542.20	Nothing.	10,000
67	494.90	9,505.10	Nothing.	10,000

NOTE 1.—The *legal reserve*, at the *beginning* of the first policy year, as shown in Col. (1), is 99.60, and the amount of insurance at risk is $9,900.40. At the end of the year the legal reserve is nothing, and the amount of insurance at risk is $10,000. The legal reserve at the beginning of each policy year, from age 40 to age 67, is from $99.60 at the former age to $494.90 at the latter age; but, at the end of each year, no legal reserve is required. The legal reserve at the beginning of any policy year is used, gradually, in payment of current death losses, until, at the end of the same year, there is nothing remaining.

The Net Premiums, above, are obtained by mathematical calculations; but the *loading* of these net premiums to obtain the corresponding **Gross Premiums** is entirely arbitrary. The loading of course is for expenses, and every company has its own peculiar notions with reference to it.

I.—Column (5), Table No. 16 contains all the Net Annual Level Premiums, according to the Actuaries Table of Mortality and 4 Per Cent. Interest, to insure *$1,000 for the whole of life*, at Ages from 10 to 99, inclusive. By loading these *Net Rates*, say 33⅓ per cent., we obtain Col. (4), Table No. 1, which contains the **Gross Annual Level Premiums** for insuring the same amounts at the same ages, for the same time.

II.—Column (6), Table No. 16, contains all the Net Annual *Natural* Premiums, according to the Actuaries' Table of Mortality and 4 Per Cent. Interest, to insure *$1,000 for one year*, at Ages from 10 to 99, inclusive. By Loading these *Net Rates*, say 33⅓ per cent., we obtain Col. (3), Table No. 1½, which contains the **Gross Annual Natural Premiums** for Insuring the same amounts, at the same ages, for the same time.

III.—Column (5), Table No. 17, contains all the Net Annual *Level* Premiums, according to the American Experience Table of Mortality and 4 Per Cent. Interest, to insure *$1,000 for the whole of Life*, at Ages from 10 to 95, inclusive. By Loading these *Net Rates*, say 33⅓ per cent., we obtain the **Gross Annual Level Premiums** for insuring the same amounts, at the same ages, for the same time.

IV.—Column (6), Table No. 17, contains all the Net Annual *Natural* Premiums, according to the American Experience Table of Mortality and 4 Per Cent. Interest, to insure *$1,000 for one year*, at ages from 10 to 95, inclusive. By loading these *Net Rates*, say 33⅓ Per cent., we obtain the **Gross Annual Natural Premiums** for insuring the same amount, at the same ages, for the same time.

TABLE C.

SHOWING THE **Net** AND **Gross** NATURAL PREMIUMS, ACTUARIES' 4 PER CENT.; ALSO THE **Net** AND **Gross** NATURAL PREMIUMS, AMERICAN 4 PER CENT., TO INSURE $1,000 FOR ONE YEAR.

AGE.	ACTUARIES' 4 PER CENT.		AMERICAN 4 PER CENT.	
	Net Natural Premium to insure $1,000, one year.	Gross Natural Premium to insure $1,000, one year.	Net Natural Premium to insure $1,000, one year.	Gross Natural Premium to insure $1,000, one year.
	Col. 1.	Col. 2.	Col 3.	Col. 4.
20	$7.01	$9.35	$7.50	$10.00
21	7.09	9.45	7.55	10.07
22	7.18	9.57	7.60	10.13
23	7.27	9.69	7.65	10.20
24	7.37	9.83	7.70	10 27
25	7.47	9.96	7.75	10.33
26	7.58	10.11	7.82	10.43
27	7.70	10.27	7.88	10.51
28	7.83	10.44	7.95	10.60
29	7.96	10.61	8.02	10 69
30	8.10	10.80	8.10	10.80
31	8.25	11.00	8 18	10.91
32	8.41	11.21	8.28	11.04
33	8.58	11.44	8.38	11.17
34	8.75	11.67	8.49	11.32
35	8.93	11.91	8.60	11.47
36	9.12	12.16	8.74	11.65
37	9.31	12.41	8.88	11 84
38	9.53	12.71	9.05	12.07
39	9.74	12.99	9.22	12.29
40	9.96	13.28	9.42	12 56
41	10.20	13 60	9 62	12.83
42	10.48	13.97	9.86	13.15
43	10.82	14.43	10.11	13.48
44	11.25	15.00	10.41	13.88
45	11.74	15.65	10.73	14.31
46	12.35	16.47	11.12	14.83
47	13.00	17.33	11.54	15.39
48	13.71	18.28	12.03	16.04
49	14.48	19.31	12.60	16.80
50	15.33	20.44	13 25	17.67
51	16.25	21.67	13.98	18.64
52	17.26	23.01	14.80	19.73
53	18.36	24.48	15.71	20.95
54	19.53	26.04	16.73	22.31
55	20.83	27.77	17.86	23.81
56	22.24	29.65	19.12	25.49
57	23.73	31.64	20.52	27.36
58	25.37	33.83	22.05	29.40
59	27.16	36.21	23.77	31.69
60	29.17	38.89	25.67	34.23
61	31.36	41.81	27.77	37.03
62	33.77	45.03	30.09	40.12
63	36.38	48.51	32.64	43.52
64	39.26	52.35	35.46	47.28

TABLE C.—CONTINUED.

AGE.	ACTUARIES' 4 PER CENT.		AMERICAN 4 PER CENT.	
	Net Natural Premium to insure $1,000, one year.	Gross Natural Premium to insure $1,000, one year.	Net Natural Premium to insure $1,000, one year.	Gross Natural Premium to insure $1,000, one year.
	Col. 1.	Col. 2.	Col 3.	Col. 4.
65	$42.39	$56.52	$38.59	$51.45
66	45.78	61.04	42.03	56.04
67	49.49	65.98	45.82	61.09
68	53.49	71.32	50.00	66.67
69	57.78	77.04	54.58	72.77
70	62.44	83.25	59.61	79.48
71	67.46	89.95	65.07	86.76
72	72.89	97.18	70.81	94.41
73	78.73	104.97	77.09	102.79
74	85.07	113.43	83.68	111.57
75	91.89	122.52	90.74	120.99
76	99.21	132.28	98.38	131.17
77	107.18	142.91	106.79	142.39
78	115 81	154.41	116.18	154.91
79	125.06	166.75	126.67	168.83
80	135.01	180.01	138.91	185.21
81	145.61	192.01	152.89	203.85
82	156.92	209.23	167.59	223.45
83	169.15	225.53	184.19	245.59
84	182.38	243.17	203.23	270.97
85	197.21	262.95	226.49	301.99
86	213.92	285.23	255.46	340.61
87	232 92	310.56	291.37	388.49
88	255.07	340.09	333.36	444.48
89	281.14	374.85	380.64	507.52
90	311.28	415.04	437.06	582.75
91	347.10	462.80	511.98	682.64
92	389.68	519.57	609.86	813.15
93	439.64	586.19	705.94	941.25
94	496 45	661.93	824.18	1,098.91
95	561.80	749.07	961.54	1,282.05
96	623.70	831.60		
97	665.68	887.57		
98	721.15	961.53		
99	961.54	1,282.05		

Note 1.—THE GROSS PREMIUMS in Table C, (2) and (4), are the NET PREMIUMS, (1) and (3), loaded 33⅓ per cent. This *uniform per centum* loading is not equitable, and Table C. is given, principally, to illustrate that it is not, in this kind of insurance. By subtracting (1) from (2); or, (3) from (4), at any age in the table, the loading is ascertained, and this is the contribution, of every policy holder insured for $1,000 at the selected age, toward the payment of the company's expenses for *one year*. By comparing columns (3) and (4), it will be seen that for each $1,000 of insurance, the *expense charge*,—loading—, is as follows: At age *twenty*, $2.50; at age thirty, $2.70; at age *forty*, $3.14; at age *fifty*, $4.42; at age *sixty*, $8.56; at age *sixty-five*, $12.86; at age *seventy*, $19.87; at age *seventy-five*, $30.25; at age *eighty*, $46.30:

at age *eighty-five*, $75.50, and, similarly, with reference to intermediate and still older ages. In THE NATURAL PREMIUM SYSTEM, the premium is fixed for only *one year*. The *next* year, it is higher; and the next, *still* higher, and so on. It is rather difficult to understand why a policy-holder at age *seventy*, insured for $1,000, should be required to pay $19.87 as his proportion of the expenses for *one year*, while another policy-holder insured in the same company for the same amount, at age *forty*, is required to pay only $3.14 as his contribution to the expense fund for the *same* year. This inequity is the result of a *uniform per centum loading* on an *annually increasing* NET PREMIUM.

Some years ago there began to be manifested a pretty general demand for cheaper insurance. Men in our best business circles wanted life insurance *for the productive period* of *life* in addition to what they called *"permanent"* insurance. To supply this demand assessment societies sprang into existence all over this country. They came like the locusts of Egypt. They were liberally patronized.

For a few years the death rate was low and the assessments few. The membership believed, as they were ignorantly taught, that the death rate would never be *much* higher, if any, and henceforth life insurance was to be obtained at a reasonable price. These societies were organized, almost without exception, by men ignorant of the fundamental principles of life insurance. The results were what every intelligent insurance man predicted. But the *demand* for cheap, temporary insurance remained, and can only be furnished on the same lives for a brief period of time.

CHAPTER XIII.

THE ASSESSMENT SYSTEM —ITS DISTINGUISHING CHARACTERISTICS.—REQUISITES FOR SOUNDNESS AND PERMANENCY.—ASSESSMENT FAILURES.—STIPULATED PREMIUM. —THE NEW YORK LAW.

III. THE ASSESSMENT SYSTEM.

The history of assessment insurance during the past twenty years is characterized by a sudden rise to what was apparently true perfection, followed almost instantly by a descent so rapid as to wipe out of existence almost every prominent company, leaving only a few which, by dint of accumulating some sort of a reserve fund in their early years, are enabled to pay their death claims with some reasonable degree of promptitude, and therefore by virtue of a weakness in the laws manage to keep out of the hands of receivers. Some companies organized originally on the assessment plan were fortunate enough to possess managers, who saw early the inherent defects of the system and set to work to place their companies on a surer foundation. These organizations by means of various enabling acts of the legislature have emerged from the chrysalis of assessmentism, and are now full-fledged level-premium companies, with every prospect of permanency. Others have so far abandoned the old-time assessment system as to adopt the provisions of so-called stipulated-premium laws, to which reference is hereafter made. Some business associations still follow the assessment system, with all its defects, but they are few in number, and, from all indications, will soon be numbered with the hosts that have gone before. Assessmentism is now practiced mainly by fraternal orders, and even these are groping, in many cases blindly, for a scientific system. The following remarks, therefore apply equally to business assessment associations and fraternal orders or societies:

ITS DISTINGUISHING CHARACTERISTICS.

1. Premiums—usually called assessments—whether collected before or after the death of a member are not limited except by the actual mortality needs of the company. Some societies collect after each death, others at fixed dates, monthly, bi-monthly, quarterly, etc., the amount of the assessment being determined by the number of deaths which have occurred since the preceding assessment. Most business associations, however, collect stipulated premiums in advance to cover the net cost of insurance, as indicated by one of the standard mortality tables, and in lieu of the "legal reserve" incorporate in the policy the vested right of collecting more, if necessary, by assessment.
2. The contract between the company or society and the insured is called, by some "*a Certificate of Membership*"; by others, "*a Policy.*"
3. The certificate or policy is required under the laws of most of the States to designate a definite sum to be paid by the society to the beneficiary, but the payments to be made by the member to the society must be flexible. When the premiums or assessments are inflexible, then the benefits under the certificates must be flexible or variable.
4. The rate of assessment in one class of societies is a *fixed* rate; that is to say, the members are divided into classes according to their respective ages, something like the following, for instance: All from 21 to 30, inclusive, constitute the First Class; those from 31 to 40, inclusive, the Second Class; those from 41 to 48, the Third Class; those from 49 to 55, inclusive, the Fourth Class; and those from 56 to 65, inclusive, the Fifth Class; the classification extending no further than age 65! Upon the death of a member the rate of assessment for each $1,000 of certificate depends upon the class he is in. The rate is fixed at date of admission, and remains unchanged so long as his membership continues. In another class of societies the classification may be the same but the rating changes. For example, the new member may be 28, and consequently, he is in the first class at date of entry, but when he becomes 31 he is a member of the second class; when 41, the third class, and so on; his rate of as-

sessment being changed to a higher one whenever he goes from one class to another In still another class of societies, whenever an assessment is levied, each member is assessed according to his *then* age, no matter what his age *was* when he entered the society. If 21 years old when an assessment is made, he pays according to the risk the society is carrying on him at that age; if 22, the rate is a little higher, because the risk is greater; if 23, the rating is still higher, and so on, through all the different ages. In some of these societies the rating is a little higher than needed for the actual current death rate, and the surplusage goes to the gradual accumulation of a reserve fund that may be used as designated in the certificate of membership. This voluntary reserve fund is not generally available until the insured has been a member for several years—five to fifteen generally—and it is called by different names, and is available at different times for various purposes, according to the different ideas of the organizers of different societies. We have not the space to name *all*, or one-hundredth part of the different phases of assessment or fraternal insurance in this country. The principles, however, underlying sound assessment insurance, are few, and those we intend to make prominent.

REQUISITES FOR SOUNDNESS AND PERMANENCY.

a.—"Nothing is more proverbially uncertain," says DR. BABBAGE, "than the duration of human life when the maxim is applied to an *individual;* but there are few things less subject to fluctuations than the average duration of life in a multitude of individuals."

DR. SOUTHWOOD SMITH says: "Mortality is subject to a law the operation of which is as regular as that of gravitation."

The concurrent testimony of all writers on the subject of vital statistics is that the law of mortality is as certain in its operations as are those of light, heat, electricity and chemical affinity. This law is epitomized in the Actu-

aries', and the American Tables of Mortality, found in other parts of this book.

By the former, out of 1,000 persons living at the beginning of a year, at age 20, *seven* die during the year; at age 30, *eight;* at age 40, *ten;* at age 50, *sixteen;* at age 60, *thirty;* at age 70, *sixty-five;* at age 80, *one hundred and forty;* at age 90, *three hundred and twenty-four;* and at age 99, *one thousand!*

The law of Mortality says—and every company or society that disregards it does so at great peril—that $7.01 must be charged for $1,000 of insurance, for one year, on a life at age 20, besides an equitable amount for expenses; when that life attains the age of 30, the sum of $8.10 must be charged for the same amount of insurance for one year; at age 40, the sum of $9.96 must be charged; at age 50, the charge must be $15.33; at age 60, not less than $29.17; at 70, at least $62.44; at 80, it is not safe to charge less than $135.01; and at 90 and 99, for $1,000 of insurance for one year, the sum of $311.28 and $961.54 must be charged, respectively, and for intermediate ages, amounts proportional to the respective ages.

A maximum sum, therefore, considerably larger than that indicated by the law of Mortality should be fixed to begin with for each $1,000 of insurance at each age, increasing every year, thereafter, commensurate with the increasing liability of the member to die; and this maximum should be named in the certificate of membership as the basis of assessments on any one person for any one year.

The maximum sum to be assessed, as above, should provide for a special reserve fund, available only to the person contributing it after 5 to 15 or more years of consecutive membership. If the certificate were to lapse before the expiration of the period named in the certificate said special reserve accumulations should be equitably credited to persistent members. This would operate as a kind of cement to hold the membership together and to reduce heavy mortality at the older ages.

b.—**The necessary expenses of a society should be provided for by the collection, from each member, annually in advance, or when an assessment is paid, or both, regardless of age, of a uniform fixed amount for each $1,000 of insurance named in the certificate. A uniform per centum loading on an increasing net premium is inequitable.**

c.—**Good Management.**

Assessment insurance managers were told repeatedly by competent authorities that the system could not last, that its defects were inherent, and while for a few years losses could be paid and new business obtained on the score of low cost, yet disaster would eventually ensue. How true these predictions were is now a matter of history, and the list of failures is a long and gloomy one. No complete record of the associations organized on this plan has ever been kept, mainly for the reason that in the earlier years the Insurance Departments did not have supervision over them. The New York Insurance Department's report prints a list of over two hundred associations which had submitted reports at one time or another between 1883 and 1899, many of which confine their operations to particular occupations or work in limited localities. From that report, however, it has been possible to compile the following table of failed or retired associations, most of which were active throughout the United States:

Assessment Companies Which Have Failed or Retired, 1889-1899.

Year Organized.	NAME AND LOCATION OF COMPANY.	Year of Last Report.	Net Cash Assets.*	Unpaid and Resisted Losses.	Insurance in Force.	
					Policies.	Amount.
1883	Connecticut Indemnity, Waterbury	1898	$90,271	$41,374	511	$1,007,575
1877	Covenant Mutual, Galesburg, Ill	1898	441,756	458,060	33,122	58,838,000
1881	Excelsior Mutual, Oxford, N. Y	1898	123,825	5,667	2,866	3,969,750
1885	Maine Benefit, Auburn	1898	143,637	95,000	5,613	9,660,429
1895	Merchants and Manufact'rs, Westfield, Mass.	1898	26,545	.....	1,719	2,428,000
1890	Merchants Life, St. Louis	1898	107,169	32,000	3,670	9,216,000
1888	National Life, Hartford	1898	296,301	162,927	7,763	12 636.385
1882	Piqua Mutual Aid, Piqua, O	1898	54,604	48,500	10,168	15,532,000
1895	Springfield Mutual, Springfield, Mass.	1898	26,509	.....	1,152	1,773.000
1880	American Life, Syracuse	1897	4,591	5,672	842	820.000
1881	Bay State Beneficiary Westfield	1896	236,611	346,780	14,041	32,465,800
1879	Massachusetts Benefit, Boston	1896	1,027,713	679,486	46,399	93,957,600
1872	Commercial Travelers, Syracuse	1895	88,408	57,500	1,703	5,629,250
1889	Industrial Benefit, Syracuse	1895	11,676	34,107	18,528	12,352,000
1883	National Life-Maturity, Washington	1895	357,302	97,850	12,563	13,980,952
1886	United Life, New York	1895	25,456	106,000	3,395	11,221,000
1885	Provident Aid, Portland	1894	53,483	18,500	1,898	5,240,000
1884	Chautauqua Mutual, Mayville, N. Y	1893	28,887	46,800	† 125	† 198,500
1882	Home Benefit Society, New York	1893	17,066	6,077	1,756	3,010,000
1883	Mutual Benefit Life, New York	1893	67,717	246,025	5,775	11,679,100
1881	National Mutual, New York	1893	21,749	51,450	2,732	5,276,950
1886	Citizens Mutual, New York	1892	26,531	53,650	5,673	6,154,625
1883	Good Templars Mutual Benefit, Rochester	1892	7,715	4,000	2,178	3,428,000

Assessment Companies Which Have Failed or Retired—*Continued.*

Year Organized.	NAME AND LOCATION OF COMPANY.	Year of Last Report.	Net Cash Assets.*	Unpaid and Resisted Losses.	INSURANCE IN FORCE.	
					Policies.	Amount.
1883	Womens Mutual, New York	1892	$3,354	$12,086	567	$1,271,720
1874	Masonic Benevolent, Mattoon, Ill.	1892	4,939	94,350	2,878	7,706,000
1886	Guarantee Alliance, New York	1891	3,387	13,500	966	1,055,000
1882	Home Benefit Association, New York	1891	23,866	130,025	3,310	9,641,266
1883	Life and Reserve Association, Buffalo	1891	157,019	23,150	6,955	6,955,000
1885	Life Union, New York	1891	57,887	25,000	2,006	5,317,500
1869	Mutual Benefit Life, Hartford	1891	17,416	27,219	2,799	4,756,000
1879	Mutual Relief Society, Rochester	1891	19,810	123,985	5,850	12,474,000
1881	National Benefit, New York	1891	4,618	34,729	968	2,198,000
1881	New York State Mutual Benefit, Syracuse	1891	15,006	19,300	3,308	5,121,100
1881	Bankers and Merchants Alliance, New York	1890	20,312	14,400	542	2,478,000
1887	Flour City Life, Rochester	1890	20,707	51,659	‡ 285	‡ 485,000
1880	New York State Relief, Albany	1890	7,827	21,737	897	1,724,700
1880	Western Union Mutual, Detroit	1890	63,363	50,000	4,712	23,972,500
1884	Family Fund Society, New York	1889	30,301	146,360	958	2,643,000
1883	Equitable Reserve Fund, New York	1888	68,646	14,976	1,089	3,561,000
1880	Home Provident Safety Fund, New York	1888	20,323	22,000	1,120	1,120,000
1882	Co-operative Life and Accident, New York	§ 1888	21,627	255,700	2,977	10,096,000
1882	Security Mutual Benefit, New York	1888	2,818	56,500	2,788	11,024,000
	Totals (42 companies)		$3,948,228	$3,734,101	229,167	$434,774,702

* After deducting cash liabilities. † At the beginning of 1893 this company reported 4040 policies in force, most of which were transferred to another company. ‡ This company reported at beginning of 1890, 2248 policies for $3,970,000. § Receiver's statement.

In studying this table it must be remembered that the entire loss is not fully expressed by it. Nearly every company here referred to was in trouble months before the final dissolution came, during which time the members deserted in large numbers. Some of them were frozen out by reason of inability to pay the heavily increased assessments, and found themselves so physically impaired as to be unable to obtain new insurance elsewhere. Most of those who remained were in the same plight, but hoped against hope that the association would last their time, only to find that the receiver could promise them nothing for all their outlay. Indeed, in some cases the receivers levied assessments to raise funds wherewith to pay claims outstanding at the date of failure. Some of the associations named in this list transferred their members to sound institutions, but that does not alter the fact that the system, as a whole, was found wanting, and in transferring their members these associations simply acknowledged that only failure could result from a continuation in business.

Stipulated Premium Laws.—For a long time, as companies operating under the assessment laws were breaking loose from the old post-mortem assessment moorings, there was a very evident searching after a new name which might more accurately express what the companies were becoming. There were not wanting those who asserted that the old name of assessment was good enough, since the distinct characteristic of the plans of the associations was that any deficiency in premiums might be made good by assessment. There were others who, misled by the popularity of the plan, were disposed to call the new system "Natural Premium Insurance," although it was not intended that it should be current cost or increasing price insurance at all.

The plans in connection with which these names were proposed were mainly of one type, viz.: Providing rates of premium which were intended to remain level, but which might be helped out by some sort of an assessment if a deficiency was found. This assessment might be payable in cash, or as an addition to the regular premium, or as a reduction from the insurance. The mode of its payment was not important as relates to the essentials to the plan. It must be perfectly clear that a fitting name for such a plan is "Stipulated Premium Insurance."

In connection with this idea of equating or leveling the premium, even though it was not guaranteed that it should remain level, there naturally arose, after a time, the additional

question of whether the plan did not call for an accumulation, and also whether that accumulation should not be a reserve, mathematically sufficient to help out the deficiencies of future premiums. Out of this also arose the inquiry whether an assessment ought not to be made, immediately that it was discovered that this reserve was not sufficient on the assumptions employed in fixing the premium, to make good these deficiencies.

A number of companies adopted this plan before legislation was enacted on the subject, and although they approached the same end by different ways, it was thought that the enactment of a proper statute was advisable. Accordingly at the 1898 session of the New York legislature a stipulated premium bill was introduced and passed, which is given in full herewith:

STIPULATED PREMIUM LAW OF NEW YORK.

SEC. 300.—Incorporation—Thirteen or more persons may become a corporation for the purpose of making insurance upon the lives or the health of persons, and every insurance pertaining thereto, by making and filing in the office of the Superintendent of Insurance a certificate signed by each of them, stating their intention to form such a corporation, and setting forth a copy of the charter which they propose to adopt, which shall state the name of the proposed corporation, the place where it is to be located, the kind or kinds of insurance to be undertaken, the mode and manner in which its corporate powers are to be exercised, the manner of electing its directors and officers (a majority of whom shall be citizens and residents of this State), the time of such election, the manner of filling vacancies, and such other particulars as it may be necessary to explain and make manifest the objects and purposes of the corporation. Such certificate shall be proved or acknowledged and recorded in a book to be kept for that purpose, and a certified copy thereof delivered to the persons executing the same.

SEC. 301.—Completion of Organization—Upon receipt of the certified copy of the certificate of incorporation from the Superintendent of Insurance, the persons signing such certificate shall publish for six successive weeks in a paper published at Albany in which notices by State officers are required by law to be published, notice of their intention to form such corporation. No such corporation shall commence the business of insurance until at least two hundred persons eligible under the proposed plan of the corporation have subscribed in writing, to be insured therein in the aggregate amount of at least five hundred thousand dollars, and have each paid in the amount in cash of one annual stipulated net premium for their age of entry on the amount of insurance severally subscribed for, and the same is deposited in a duly incorporated bank to the credit of said company, to be held in trust for the benefit of the members and beneficiaries; nor until such corporation has deposited with the Insurance Depart-

ment of the State of New York one hundred thousand dollars, in such securities as are required by law to be deposited by insurance corporations; and the Superintendent of Insurance shall have further certified that it has complied with the provisions of this article, and is authorized to transact the business of insurance. The securities deposited with the Insurance Department, pursuant to this section, shall be held by the superintendent in trust for the benefit and protection, and as security for the policy-holders of the corporation, their legal representatives and beneficiaries.

SEC. 302.—Corporations Subject to this Article—Any corporation or association which issues any policy, certificate or other evidence of interest to, or makes any promise or agreement with its members whereby any money or other benefit is to be paid to a member, or upon his decease to his legal representatives or the beneficiary designated by him, which money or benefit is derived from stipulated premiums collected from its members, or members of a class therein, or from interest or accumulations, and wherein the money or other benefits so realized is applied to or accumulated for the use and purposes of such corporation or association as herein specified, and the expenses of its management and prosecution of its business, shall be deemed to be engaged in the business of life insurance upon the stipulated premium plan and shall be subject only to the provisions of this article, excepting that the provisions of article one of the insurance law shall be applicable so far as same are not inconsistent with the provisions of this article.

SEC. 303.—Existing Corporations, Associations or Societies Qualifying Under this Article—Any domestic corporation, association or society existing or doing business at the time this article takes effect, may, by vote of a majority of its board of directors or trustees, accept the provisions of this article, and amend its charter to conform with the same, upon obtaining the consent of the Superintendent of Insurance, thereto, in writing, and thereafter it shall be deemed to have been incorporated under this article; and every such corporation, association or society, in reincorporating or qualifying under the provisions of this article, shall, for that purpose, so adopt, in whole or in part, a new charter in conformity herewith, so as to cover and enjoy any and all the provisions or privileges of existing laws, which might be included and enjoyed, if it was originally incorporated hereunder; and it shall, upon such adoption of and after obtaining the consent, as in this section provided, to such charter, filing the same with the record of adoption and consent in the office of the Superintendent of Insurance perpetually enjoy the same as, and be, such corporation, and which is hereby declared to be a continuation of such corporation which existed prior to such reincorporation, and the offices therein which shall be continued shall be filled by the respective incumbents for the periods for which they were elected, and all others shall be filled in such manner as shall be provided in such amended charter. The reincorporating or qualifying of any existing domestic corporation, association, or society under the provisions of this article shall in no way annul, modify or change any existing contract, contracts or liabilities of such existing corporation, association or society; and

any and all such contracts and liabilities shall continue in full force and effect the same as though such corporation, association or society had not reincorporated or qualified under this article. Neither shall the reincorporating or qualifying of any such corporation, association or society, under the provisions of this article, in any way prejudice, impede or impair any pending action or proceeding, or any rights previously accrued.

SEC. 304.—Minimum Premium—Every such corporation or association doing business under the provisions of this article shall charge a net premium calculated upon the Combined Experience or Actuaries' Table of Mortality, with interest at the rate of four per centum per annum, equal to that of a yearly term insurance at the age of entry. Such premium shall be increased by a loading of not less than twenty-five per centum, and may be paid either annually, semi-annually, quarterly, or bi-monthly, in advance.

SEC. 305.—Reserve Fund—Every such corporation or association shall accumulate, and at all times maintain a reserve fund of not less than one net bi-monthly, quarterly, semi-annual or annual premium, according to the term of premium payment of each policy, upon all its outstanding policies and certificates, which net premium shall equal the amount called for by the Combined Experience or Actuaries' Table of Mortality at the attained age of the insured, computed as specified in section three hundred and four. If the amount of such reserve fund is at any time reduced to less than one such net premium upon all its outstanding policies and certificates at the attained age of the insured, such deficiency shall be made up and restored to said fund within three months thereafter. Should such impairment of the reserve fund not be made good within three months, then the Superintendent of Insurance shall require the officers of such corporation or association to forthwith notify its members to pay within thirty days from the mailing of such notice, an extra premium, sufficient to meet such deficiency, apportioned pro rata to the amount of their insurance and to the difference between the actual net premium paid and the net premium at attained age. If any member or members fail to pay such extra premium within the time named, the corporation or association shall scale down the policy or certificate of each and every member so failing to pay to such an amount as is necessary to make the reserve fund to his credit equal to said net premium on his insurance remaining in force, which amount shall be the maximum for which the corporation or association shall be liable under his policy or certificate. Said thirty-day notice shall clearly state the proportionate amount of the impairment due from him, and shall contain the further statement that in the event of failure to pay the same within thirty days after the mailing of such notice, his policy will be scaled down as aforesaid. The provisions of this section shall not apply to policies or certificates mentioned and described in sections three hundred and six or tthree hundred and seven.

SEC. 306.—Limited Payment Policies—Any corporation or association doing business under this article may issue limited payment policies or certificates provided such policies or certificates distinctly state the reserve required to be accumu-

lated and maintained thereunder, which shall be computed on the net premium basis according to the Actuaries' or Combined Experience Table of Mortality with interest at four per centum per annum, and shall be held by and charged against such corporation in lieu of the reserve provided for in section three hundred and five.

SEC. 307.—Cash Values—Any corporation or association authorized to do business hereunder may pay fixed cash values, provided the amount of reserve computed and to be set apart for such cash value is plainly stated in the policy or certificate, and provided further that the net premium charged for such cash value in such policy or certificate shall not be less than an amount which increased at four per centum compound interest will at the end of the period equal the amount of said fixed cash value.

SEC. 308.—Distribution of Surplus—If the cash and invested assets of the corporation exceed the reserve fund required by this article, and the actual liabilities of said corporation or association, to an amount in excess of ten per centum of such reserve fund, then the amount of such excess may be apportioned by the corporation as a dividend to members whose policies or certificates shall have been not less than three years in force, in reduction of premiums, in the purchase of paid-up or extended insurance or may be drawn in cash; or such dividend or dividends may be paid to the beneficiary of a deceased member in addition to the face of his policy.

SEC. 309.—Payment of Maximum Amount—Every policy or certificate hereafter issued by any corporation doing business under this article, and promising any payment to be made upon a contingency provided for in this article, shall specify the sum of money which it promises to pay upon each contingency insured against, and the number of days after satisfactory proof of the happening of same on which such payment shall be made. Upon the occurrence of such contingency, unless the contract shall have been avoided by fraud, or breach of its conditions, the corporation shall be obligated to the beneficiaries or insured for such payment at the time and to the maximum amount due under the policy or certificate. If the Superintendent of Insurance shall be satisfied, upon investigation, that any such corporation has refused or failed to make such payment for thirty days after it became due, and after proper demand, he shall notify the corporation to issue no new policies or certificates until such indebtedness is fully paid; and no officer or agent of the corporation shall make, sign or issue any policy or certificate of insurance while such notice is in force.

SEC. 310.—Foreign Corporations—No corporation, association or society organized under the laws of any other State or Territory of the United States or of the District of Columbia or foreign country, shall transact business under the provisions of this article until it has received from the Superintendent of Insurance a certificate of authority to do business in this State, a duplicate of which shall be filed in his office. The Superintendent shall annually issue to such foreign corporation, association or society, renewal certificates of authority to continue its business if it shall have fully complied with the laws of this State, and its annual report is

satisfactory to him, which certificate shall be filed in the office of the Clerk of the County where its principal office is located within this State, within sixty days after the filing of such annual report, and no such foreign corporation, association or society shall be authorized to continue such business after the expiration of such sixty days, unless such certificate shall have been so received and filed. The Superintendent shall refuse a certificate of authority or renewal of the same to any such foreign corporation, association or society, when in his judgment such refusal would best promote the public interest, or when by the laws of the State or Territory under which the same is organized a corporation or association, of this State, doing a life insurance business upon the stipulated premium plan, is not permitted to transact such business in such other State or Territory. When any State or Territory shall impose any obligation upon such corporation or association of this State or their agents transacting business in such other State or Territory, the like obligations are hereby imposed upon similar corporations, associations or societies of such other State or Territory, and their agents or representatives, transacting business in this State, and such corporation, association or society of such other State or Territory, and their agents and representatives, shall pay all licenses, fees or penalties to and make deposits with the Superintendent of Insurance, imposed by the laws of such other State or Territory upon any corporation or association of this State doing business therein; and in case of failure to pay the same, the Superintendent shall refuse the certificate of authority herein provided for or cancel such certificate if one shall have been previously issued. No foreign corporation, association, or society shall be authorized to transact any business authorized by this article within this State, unless it furnishes evidence satisfactory to the Superintendent of Insurance that it has a reserve fund equal in amount to that required by this article, and that the same is held for the benefit of policy or certificate-holders only and invested as required by the insurance law of this State. Neither shall any foreign corporation, association or society be authorized to do business in this State unless it collects for the benefit of its policy-holders a net premium equal at least to that provided for by the terms of this article.

SEC. 311.—Surrender Value of Lapsed or Forfeited Policies—Whenever any policy or certificate of life insurance hereafter issued by any corporation or association doing business under this article, after being in force five full years, shall by its terms lapse or become forfeited by the non-payment of any premium, or any note given for a premium, or loan made in cash on such policy as security, or of any interest on such note or loan, the reserve on such policy computed according to the American Experience Table of Mortality, with interest at the rate of four and one-half per centum per annum shall on demand made with surrender of the policy within six months such lapse or forfeiture be taken as a single premium of life insurance at the published rates of the corporation at the time the policy was issued, and shall be applied as shall have been agreed in the application or policy, either to continue the insurance of the policy in force at the full amount so long as such single premium will purchase tem-

porary insurance for that amount at the age of the insured at the time of lapse or forfeiture, or to purchase on the same life at the same age paid-up insurance payable at the same time and under the same conditions, except as to payment of premiums, as the original policy. If no such agreement be expressed in the application or policy such single premium may be applied in either of the modes above specified at the option of the owner of the policy, notice of such option to be contained in the demand hereinbefore required to be made to prevent the forfeiture of the policy. The reserve hereinbefore specified shall include dividend additions actually made, calculated at the date of the failure to make any of the payments above described according to the American Experience Table of Mortality, with interest at four and one-half per centum per annum, after deducting any indebtedness of the insured on account of any annual, semi-annual, quarterly or bi-monthly premium then due, and any loan made in cash on such policy, evidence of which is acknowledged by the insured in writing. The net value of the insurance given for such single premium under this section computed by the standard of this State shall in no case be less than one-half the entire reserve computed according to the rule prescribed in this section, after deducting the indebtedness as specified, but such insurance shall not participate in the profits of the corporation. This section shall not apply to any case where the provisions of the section are specifically waived in the application.

SEC. 312.—No Forfeiture of Policy Without Notice—No life insurance corporation or association doing business under this article in this State shall declare forfeited or lapsed any policy hereafter issued or renewed unless the same is a term insurance contract for one year or less, nor shall any such policy be forfeited or lapsed by reason of non-payment when due of any premium, interest or instalment, or any portion thereof, required by the terms of the policy to be paid unless a written or printed notice stating the amount of such premium, interest or instalment or portion thereof due, or to become due, on such policy or certificate, the place where it should be paid, and the person to whom the same is payable, shall have been duly addressed and mailed to the person whose life is insured, at his or her last known postoffice address, postage paid by the corporation or by an officer thereof, or person appointed by it to collect such premium, at least fifteen and not more than forty-five days prior to the day when the same is payable. The notice shall also state that unless such premium, interest, instalment or portion thereof when due shall be paid to the corporation or association or to a duly appointed agent, or person authorized to collect such premium, on or before the day it falls due, the policy and all payments thereon will become forfeited and void, except as to the right to surrender value or paid-up policy as in this article provided. No such policy shall in any case be forfeited or declared forfeited or lapsed until the expiration of thirty days after the mailing of such notice. The affidavit of any officer, clerk, employee or agent of the corporation, or of any one authorized to mail such notice, that the notice required by this section has been duly addressed and mailed by the corporation, association or its representative shall be presumptive evidence that such notice has been duly given.

SEC. 313.—Discrimination Prohibited—No life insurance corporation or association subject to the provisions of this article shall make any discrimination in favor of individuals of the same class or of the same expectation of life, either in the amount of premiums charged or in any return of premium, dividends or other advantages. No agent of such corporation shall make any contract for insurance or agreement as to such contract other than which is plainly expressed in the policy issued. No such corporation or association or agent thereof shall pay, or allow, or offer to pay or allow, as an inducement to any person to insure, any rebate or premium, or any especial favor or advantage whatever in the dividends to accrue thereon, or any inducement whatever not specified in the policy. If it shall appear to the satisfaction of the Superintendent of Insurance, after a hearing by him, upon due notice, that any corporation is issuing policies or making contracts that are in violation of this section, he shall, upon the written approval of the Attorney-General, require such corporation, and its officers and agents to refrain, within twenty days, from making any such policy or contract. If any such corporation or association, or officer or agent thereof, shall fail to comply with the provisions of this section, the Superintendent shall institute such proceedings at law as may be necessary to restrain such violation of this section.

SEC. 314.—Personal Liability—No person shall incur any personal liability for the losses or liabilities of any corporation or association organized or doing business under this article by reason of being a policy or certificate-holder in such corporation.

SEC. 315.—Withdrawals of Securities Upon Relinquishment of Business—When any such corporation shall desire to relinquish its business the Superintendent shall, on application of such corporation under the oath of its president or principal officer and secretary or actuary, give notice of such intention in a paper published at Albany in which notices by said officers are required by law to be published, at least twice a week for six months. After such publication he shall deliver up to said corporation the securities held by him belonging to it, upon being satisfied by an exhibition of the books and papers belonging to such corporation and on examination made by himself or by some competent person to be appointed examiner by him, and upon the oath of the president or principal officer, and the secretary or actuary of said corporation, that all its debts and liabilities of every kind are paid and extinguished that are due or may become due upon any contract or agreement made by said corporation. The Superintendent may also from time to time deliver up to such corporation or its assigns any portion of such securities on being satisfied in the manner and form hereinbefore required, or upon any other competent proof, that all the debts and liabilities of every kind that are due or may become due are less than the amount or proportion of such securities which he shall still retain.

SEC. 316.—Change of Beneficiary—Membership in any such corporation or association shall give to any member thereof the right at any time, with the consent of such corporation or association, to make a change in his payee or payees

or beneficiary or beneficiaries without requiring the consent of such payees or beneficiaries.

SEC. 317.—Exemption from Execution—The money paid by any such corporation or association to a member or beneficiary shall be exempt from execution and shall not be liable to be seized, taken or appropriated by any legal or equitable process to pay any debt or liability of a member or the widow or minor children of a deceased member of such corporation or association designated as the beneficiary thereof.

SEC. 2.—Article ten of the insurance law is hereby made article eleven, and sections two hundred and ninety, two hundred and ninety-one, two hundred and ninety-two and two hundred and ninety-three thereof are hereby renumbered, sections three hundred and thirty, three hundred and thirty-one, three hundred and thirty-two and three hundred and thirty-three, respectively.

SEC. 3.—This act shall take effect immediately.

Other States speedily followed the lead of New York and stipulated premium laws are now in force in the States of New York, Ohio, Wisconsin, Missouri, Iowa and Nebraska. The principal provisions of the law of New York may thus be summarized.

Companies may be formed under the act, and existing companies may be rechartered and adopt its features if they choose, but without prejudice to their existing contracts. A "Stipulated Premium Plan" company must have $500,000 of insurance applied for and one premium paid in advance; the sum of such premiums must be deposited in a bank for the benefit of all policy-holders; $100,000 must be deposited with Superintendent of Insurance for a similar purpose; a reserve fund must be maintained to equal at least one annual net premium collected from all members; when it falls below the required amount policy-holders are to be assessed pro rata to make good the impairment, and if anyone neglects to pay his share his policy will be scaled down to meet the requirement; companies must charge a minimum premium based on the Combined Experience Mortality Table and interest at four per cent., with not more than twenty-five per cent. loading; companies may issue limited-payment policies and provide for cash surrender values; when the assets exceed the required reserve and all liabilities to an amount equal to ten per cent. of the reserve, such excess may be distributed among the policy-holders and used either in payment of premiums or to increase the amount of insurance, or may be taken in cash; policies in force five years may not be lapsed for non-payment of premium, but the reserve applying to such policies shall be used as a single premium to continue such insurance in force; claims must be paid within thirty days after they become due or the Superintendent of Insur-

ance may compel the company to cease doing business; no policy-holder assumes any personal liability because of his membership in such company; policies cannot be forfeited for non-payment of premium without due notice of amount due and demand for its payment; the bill also contains an anti-discrimination section.

The adoption of the law in New York did not lead to any radical departure on the part of assessment companies. Only one organization took advantage of its provisions and reincorporated under it, and that step was speedily followed by a second reincorporation under the level-premium law. Two years elapsed before a company of another State was admitted to New York under the stipulated premium law. In Ohio the passage of the law was followed by the incorporation of a few new companies, while one or two changed their plans to agree with its provisions. In Missouri, Wisconsin, Iowa and Nebraska most of the existing assessment companies have already reincorporated, or are taking steps to that end.

That the law is not satisfactory was speedily shown, some companies preferring to go direct to the level-premium basis rather than be known as stipulated premium companies. One difficulty which the associations incorporated under stipulated premium laws, encountered, is that the law does not appear to consider that stipulating a premium on an ordinary life policy calls for a reserve larger than for a natural premium or yearly term policy. Note the language of the New York law:

Reserve Fund.—Every such corporation or association shall accumulate and at all time maintain a reserve fund of not less than one net bi-monthly, quarterly, semi-quarterly or annual premium, according to the term of premium payment of each policy, upon all its outstanding policies and certificates, which net premium shall equal the amount called for by the Combined Experience or Actuaries' Table of Mortality at the attained age of the insured, computed as specified in section 304. If the amount of such reserve fund is at any time reduced to less than one such net premium upon all its outstanding policies and certificates at the attained age of the insured, such deficiency shall be made up and restored to said fund within three months thereafter.

The section 304 referred to is in part as follows:

Every such corporation or association doing business under the provisions of this article shall charge a net premium calculated upon the Combined Experience or Actuaries' Table of Mortality, with interest at four per cent. per annum, equal to that of a yearly term insurance at age of entry.

Thus, on any whole life policy, whether it be with pre-

miums stipulated and expected to be level or with annual term premiums, the reserve required is to be only one net premium at the attained age for annual term insurance. This is on the average about twice the reserve that is charged a regular company on annual term insurance, or that ought to be charged these companies; it is less by nearly the whole amount of the terminal reserve according to the Actuaries' Table than should be charged against a company on whole life policies with premiums that are expected to be level. This is a serious matter, as no assessment to make good a deficiency need be levied until the reserve falls below these figures, which means in practice until the fund of a policy is almost exhausted. Thus, the insured may go on with a policy taken at a young age, supposing that a sufficient reserve according to law has been held, only to find himself obliged to pay for natural premium insurance at an advanced age. This is the very evil of irresponsible assessmentism which the framers of the stipulated premium law are supposed to have desired to avoid. The consequences of that sort of behavior on the part of ignorant or misguided managers have been prejudicial to the repute and interests of associations that have not followed that course. But this law leaves managers of the old type free to mismanage as of old.

Managers of associations which charge lower premiums than are necessary according to the Actuaries' Table and four per cent. to furnish insurance at a level premium for life, have sought to claim the virtue of being up to the New York standard. With many persons a certificate to that effect would be tantamount to a certificate both of solvency and of sufficiency of the rates charged, and the law is open to criticism in that it permits companies thus to virtually misrepresent themselves to the public as being solvent under the law, whereas they may actually be insolvent.

The law should be modified and amended in this regard. Already under its provisions the companies are held to the full legal reserve on limited payment policies. They should also be held to a similar standard on life policies, and if that is done, the law is of no use anyhow, for stipulated premium laws are not needed for companies that can put up full legal reserves. If a company can and will do that, it can get more good out of compliance with legal reserve laws and the reputation of an "old-line" company than out of stipulated premium laws. If it desires to retain the "safety clause," there is nothing in the regular company laws to prevent it, although there does not exist such a doubt of the sufficiency of premiums that afford full legal reserves, as to call for a "safety

clause." Nearly a dozen companies organized originally as assessment institutions have passed to the ranks of level-premium companies, most of them without using the stipulated premium law as a stepping stone.

CHAPTER XIV.

SYNOPSIS OF THE MASSACHUSETTS LAW WITH REFERENCE TO ASSESMENT INSURANCE, BY INSURANCE COMMISSIONER JOHN K. TARBOX.—HIS GENERAL REMARKS ON THE SAME.—HIS COMPARISON OF ASSESSMENT INSURANCE WITH OLD LINE INSURANCE.—CO-OPERATIVE BUSINESS, BY JOHN A. MCCALL, JR., SUPERINTENDENT OF THE NEW YORK INSURANCE DEPARTMENT.—CATCH-PENNY INSTITUTIONS.—CO-OPERATIVE INSURANCE, BY EPHRAIM WILLIAMS, INSURANCE COMMISSIONER OF CONNECTICUT.—HIS REMARKS ON THE GROUPING OF DIFFERENT AGES FOR PURPOSES OF ASSESSMENT.—FRATERNAL ORDERS.—FRATERNAL CONGRESS MORTALITY TABLE.

Although, as stated in the preceding chapter, assessment insurance, except as conducted by fraternal orders, is now virtually a thing of the past, the lessons taught by experience are not to be ignored, and the remarks of the insurance supervising officials herein quoted are as pertinent to-day as when originally written.

From the Thirtieth Annual Report of the Insurance Commissioner of the Commonwealth of Massachusetts, January 1, 1885.

"Chapter 183 of the acts of 1885 is an act to regulate the business of life and health insurance on the assessment plan and to authorize the formation of corporations to transact such insurance on that plan. It is unique in some of its features. Its provisions apply to all associations, now or hereafter formed, which make assessment insurance contracts, except fraternal societies and organizations with select membership, and unincorporated bodies with a maximum limit of five hundred dollars benefit. Corporations organized under it cannot transact business until two hundred persons have subscribed for insurance and paid in one full mortuary assessment in trust for beneficiaries. Their contracts must be for a sum specified in the policy or contract, and when the obligation accrues the beneficiary shall have a prior lien, defeated only by proceedings in insolvency, upon all the property of the corporation for its payment, and, if payment is not made within thirty days after demand, the corporation upon notification by the commissioner shall issue no policy while such notice remains in force. Policies cannot issue upon the life of any person over sixty years of age, nor for the benefit of a person who has no interest in the insured life. An assignment to

a person having no interest in the insured life voids the policy. Each corporation must provide for an emergency fund, distinct from its ordinary death fund, to be maintained at all times, of an amount not less than the proceeds of one death assessment on all its policy-holders. This fund is to constitute a trust for the payment of policy claims not otherwise provided for, to be invested in such securities as insurance companies may by law invest their capital, and deposited with the treasurer of the commonwealth. These securities can be withdrawn from deposit only upon a requisition of the corporation, endorsed by the insurance commissioner, and for the purposes of the trust. When the corporation shall cease business the fund is to be administered under judicial authority (1), for the payment of accrued claims, if any, and (2), the payment, in order, of claims that shall accrue. Existing corporations are given six months from the passage of the act, and newly organized corporations six months from date of their incorporation, to accumulate the fund.

"All assessments must be for a specific purpose, and the proceeds must be applied to the stated use.

"When a corporation not purely mutual neglects without justifiable cause for thirty days after proof of death to levy an assessment for payment of the claims, the members of the corporation shall be personally liable to the beneficiary for the amount due.

"No corporation shall re-insure with another corporation unless the contract therefor shall be approved by a two-thirds vote of a meeting of the policy-holders held to consider the matter. Agents, solicitors and physicians of any such corporations, are liable to fine and imprisonment for making wilful false statements or representations in reference to insurance therein. The act provides for the admission of similar corporations of other States to transact business in Massachusetts. To qualify itself for such admission such foreign corporation must file with the insurance department (1), a certified copy of its charter; (2), a statement under oath of its business for the preceding year, and that it is paying and for the past year has paid in full the maximum amount named in its policies; (3), a certificate from the proper authority in its State that like corporations of this commonwealth are legally entitled to do business in such State; (4), a copy of its policy and form of application, which must show that benefits are provided for by assessments on policy-holders; (5), evidence satisfactory to the commissioner that it accumulates a safety or emergency fund equal in amount, and of the character required of our home companies. It is made the duty of the commissioner to revoke the authority of such foreign corporation whenever he shall be satisfied that it does not pay its policy obligations in full.

"The act defines the duties and powers of the commissioner in respect to these corporations. He is given the same powers of visitation and examination as in the case of life insurance companies under chapter 119 of the Public Statutes. Whenever he is satisfied that a corporation has exceeded its powers, failed to comply with any provisions of law, or is conducting business fraudulently; and, whenever, after notice upon information of its default for thirty days to pay a claim due, and investigation had thereon, it shall appear to him the liabilities of a corporation exceed its resources, and that it cannot within a reasonable time, not more than three months from the date of original default, pay its accrued indebtedness in full; he shall report the facts to the attorney-general, who shall apply to the supreme judicial

court for an injunction and such other judicial proceedings as the interests of the corporation and of the public may require.

"This legislation, though inadequate for some important objects, will effect useful results in the care and prevention of several abuses and the protection of the public, at least in a degree, from imposition, and is perhaps as radical legislation as could be secured in the present state of popular feeling and information on the subject.

"I am, however, not content to pass the matter finally without further brief comment. Insurance has come to be a common need of our social life. Corporations engaged in it serve, in a special sense, a public want, and are not to be regarded or consti tuted or left subject alone to the laws of trade, as are ordinary business enterprises organized and conducted primarily for individual profit. The people have the right, which the State should guard, to obtain the advantages of these institutions as cheaply as they can be furnished, and that the institutions should be constructed on the basis most conservative of the safety of the interests they involve. * * * * Corporations now organized, with a membership sufficient to pay a full maximum benefit from the proceeds of a single assessment, will be able to adjust their affairs to the requirements of the new statute with little inconvenience, since the old and new certificates will possess the same actual value. But corporations with certificates issued for a nominal amount, larger than an assessment will realize, encounter a difficulty in the management of their business which may be overcome, and perhaps not otherwise than by a substitution for the old certificates of new certificates, conformable to law, for a specified sum as nearly equal as may be to one assessment collection. This substitution the present members should cheerfully consent to, as they will suffer no substantial injury thereby, and it seems the only mode to secure equality in assessments. I entertain no doubt, sufficient to affect official action, that the statute intends the contract shall state precisely and unconditionally the sum to which the beneficiary under it is entitled, and that any form of contract which left the amount to be paid dependent upon uncertain conditions, as the more or less proceeds of an assessment, would be judiciously held an unlawful evasion of the statute."

Under the head of Beneficiary and Assessment Insurance Corporations, the Commissioner said:

"The department has unofficial information of several associations which organized in form of law and carried on a lawful, but essentially fraudulent business with the public, for a season, and then disappeared with unfulfilled obligations. These, and similar abuses, inflicted upon the public under shield of the law, will be measurably redressed in future, by the recent act of the legislature. * * *

"The new statute is likely to compel the speedy departure of several, which will be unable to meet its qualifications and have no adequate reason for their existence, and others will ultimately yield to the competition of more potent rivals. And thus the system must abide ultimate judgment upon the fate of a few chosen representatives. The demonstration may be somewhat remote. A well managed association ought to sustain itself for a few years without difficulty. If it attempted to insure lives to the age only of fifty, it might rationally go on for an indefinite term on that basis. But to an association which undertakes to insure

persons to the extreme limit of human life, the crisis comes when a considerable body of its members reach old age and the death-rate rapidly increases, as must be. If assessments are graded to the relative prospect of longevity of members, as the ages advance, will the old man stay in and pay the greatly augmented cost of insurance? If, as probable, not, then the plan fails as whole-life insurance. Or, if assessments are not graded, will the youth stay in and bear his disproportionate burden of a common loss for the benefit of the more aged? The assumption of this plan is that new lives will constantly come in and maintain the average age and a uniform death-rate, in which case the association may last and perform its functions while those relations are kept. Time will test and judge its merits and limitations. Meanwhile, we may safely assume that with proper administration the assessment plan may furnish a cheap and good temporary insurance and a public beneficence; and that the absolute life insurance afforded by the level premium method, is not possible to the assessment plan as yet formulated, because the latter depends on conditions of the future, incapable of present assurance. It is the difference between a naked conditional promise, and an absolute promise secured by sufficient pledge of value. Both plans of insurance have distinctive merits, and in behalf of both, pretensions are put forth not entitled to respect."

The wisdom of a majority of the legislation of Massachusetts is conceded, and it was thought when the law above referred to was passed that the assessment system was sufficiently safeguarded. But before fifteen years had elapsed the Massachusetts legislature passed a law practically eliminating assessment insurance as conducted by business associations, and permitting existing institutions to transform themselves into life insurance companies on the level-premium plan. It is a noteworthy fact that of all the Massachusetts companies living at the time of the passage of the act of 1883, not one was in existence when the Dewey law was enacted in 1899, and only two domestic companies took advantage of it.

The Hon. John A. McCall, Jr., at one time Superintendent of the Insurance Department of the State of New York, under the head of "Co-Operative Business," in his official report to the legislature of that State, for the year ending December 31, 1884—date of report, February 19, 1885—said:

"The management of the Co-operative organizations generally appears to be intrusted to reliable and faithful officials, but the difficulty encountered in securing members without the intervention of special agents is apt to place the control and continuance of the association within the power of the intervenors. In very many instances it has been found that the allegiance and loyalty of these individuals depend upon the extension of, or additions to, their jug-handle contracts. And once they sever their connection with an association, their zeal and activity in pointiug out its weak spots is comparable only to their efforts to destroy its existence, by a transfer of the members to the agent's latest attachment. It is not surprising that the vehement individuals that prate unceasingly against old line companies should be found pursuing the most objectionable of their methods. In the prominent cases of this coming within the censure of the De-

partment, and made manifest by its investigations, the names of former agents of defunct life insurance companies appear conspicuously. If mentioned they would be recognized as the inventors of chimerical plans, and the stentorian advocates of corporations whose weakness was their chief feature. It is not difficult, then, to understand that mistrustfulness and doubt are engendered by the action and promises of such employés, or that such associations will have but a short-lived existence, when it is realized that the rights of their members are subordinate to the privileges and powers of the agents. The fair-minded people who are honest in their advocacy of this plan of preservation, and whose efforts are directed to protect themselves by reform within, and from danger without, the co operative institutions, are fully cognizant of the troubles that threaten to destroy the usefulness of all the associations. To them the superintendent is confident he will not appeal in vain for assistance in the correction of the abuses described. The officers who prosecute their business in an honest way need have no fear that any doubt of the superintendent as to the system of assessment insurance will be allowed to destroy or impair the existence of any legitimate organization. The law will be carried out in every case, without consideration or thought of the great influences which are often referred to as being continually at work, in and out of the Legislature, for and against co-operative associations. There will be no hesitation in criticising or closing up the affairs of any mismanaged institution, through contemplation of the effect it may have on the remaining associations; neither will the superintendent condemn a society because it shows evidence of success, thus disproving the assertions and predictions of those who are paid to print their conclusions.

"The pretenses and promises of some of the managers would be grotesque if they were not put forth in a serious way. It is not doubted that if the promoters of some of the advertised schemes were pecuniarily responsible, they could be compelled, personally, by reason of their false representations to make good their wondrous pledges. That the danger to honest assessment organizations caused by the practices of the catch-penny institutions is realized, will be seen by reference to the report of the executive committee of the Mutual Benefit Life Associations of America, made at the ninth annual convention, held in October last, at Cincinnati, as follows:

"'First. The expense of management must be provided for, in the main, by fixed annual dues.

"'Second. The mortality rates at age of entry must be graded according to one of the combined standard mortality tables.

"'Third. If the mortality rates do not increase with age, after entry, the rates at entry must be loaded twenty-five per cent., at five per cent. per annum, compound interest, and such loading with interest must be held as a liability or reserve, and applied to the payment of the respective policies when they become claims, and the assessments upon surviving members correspondingly reduced.

"'Fourth. If the rates increase after age of entry, such increase must not be less than 100 per cent., or double the original rate, by the end of the probability of life expectancy of the insured.

"'Fifth. If any sum of money or endowment is promised to members during life, such sum must be provided for by collecting monthly, quarterly, semi-annual, or annual payments, in excess of the cost of mortality, that will, at four and a-half per cent.

per annum during the endowment period, amount to the sum promised.

"'Sixth. If a uniform rate for all ages is charged, the benefit to be paid must be graded according to the life expectation, and when graded according to life expectation from age of entry, the rate of assessment must be loaded at least twenty-five per cent., at the rate of five per cent. per annum, and reserved and used in part payment of death claims in order to offset the increasing liability arising from the advancing age of members.

"'Seventh. All the modern precautions in selection must be rigidly enforced, and no members admitted over the age of sixty.'

"The recommendations of the committee are quite commendable, and they are quoted here as the judgment of intelligent officials, who by experience are entitled and competent to point out the apparent dangers to the system, and suggest the needed remedies.

"The superintendent does not desire to be understood as favoring or endorsing all of the above recommendations, and in particular he objects to to the one referring to endowment payments, to which payments, on any assessment plan, he is opposed, as being futile and in contradiction of the theory of co-operative insurance. In the main, however, the report of the committee is exceedingly conservative, and will tend to protect the associations and their members from the evils connected with the sham concerns that 'have no hope of existence unless they, so to speak, undersell the honest ones, by promising larger benefits for the same money or similar benefits for less money.'"

"In the line of reform, also, is the action taken during this year, by the Illinois Mason's Benevolent Society, an institution that has paid in fourteen years about $2,500,000 to the beneficiaries of its members. It was apparent from the experience of the society, that while abundantly able to care for its present claims, it was evident it had outlived the scheme upon which it was founded, and its survival depended entirely upon a change of its plan, so that assessments would be regulated by the increasing age of the member, instead of a uniform contribution without regard to age. This recognition of the only method that can give permanency to the co-operative plan of life insurance, is deserving of emulation by the organizations that are operating on the fallacious principle that served to lull the Western organization into a fancied security, until 'the society languishes, and while the older men remain with it, without diminished risks, the young fail to be attracted in numbers sufficient to reduce the average age.'"

Assessment organizations claiming New York as their home State, were very numerous when the foregoing was penned by John A. McCall in the early days of 1885, and a large number were organized in the years immediately following. In 1889 a law was passed modeled somewhat on the lines of the Massachusetts law, and requiring the possession of at least $8,000 before business could be begun, as a result of which scarcely a half-dozen companies have since started, while on the other hand every year has seen a number disappear until now there are not a dozen organizations left of any prominence.

The Hon. Ephraim Williams, formerly Insurance Commissioner for the State of Connecticut, in his official report to the legislature for the year ending December 31, 1884—report dated April 10, 1885—said:

"All properly conducted assessment companies fix their yearly assessments strictly according to the respective ages of the members and the year's risk at those ages. All grouping of different ages for a like assessment is inequitable, and therefore objectionable. For the younger ages in the group pay not only for themselves, but also in part for the older ages. It matters not whether the assessment be large enough to cover the risk of the eldest age in the group or only sufficient to cover the average age; in either case the younger are overcharged."

In the year 1900 the Connecticut report appeared without the record of a single assessment company, except the gloomy record of the receivers.

The foregoing official utterances of the Insurance Commissioner of Massachusetts, and of the Superintendents of Insurance for the States of New York and Connecticut, are worthy of careful consideration. More attention has been given to life insurance in all its different phases, and more money expended in its supervision, in these three States than in all the other States of the Union.

Fraternal Orders.—These orders, which now number well up in the hundreds, had their origin in 1868 with the establishment of the Ancient Order United Workmen. This order started out by collecting one dollar per member for each death, and soon proved an apparent success. So rapid was its progress that a host of imitators speedily came into the field, all offering insurance at cost. As the years rolled on and the average age of the membership increased in spite of the constant accession of new blood, the death losses in many orders rose to an alarming figure and disintegration set in. Some have failed and a number, among which are included several large orders, are in dire straits with nothing short of bankruptcy before them.

The plan or system upon which these orders worked for many years was the flat assessment principle. No funds were accumulated to keep down the advancing mortuary cost, but when money was required to pay death claims, an assessment was levied. If the assessment produced more than the unpaid claims, the balance was retained to pay other claims as they accrued. Then when the death benefit fund was again depleted, another assessment was levied. Of late years efforts have been made by many orders to provide some sort of accumulation so as to prevent assessments being levied too frequently, or in too large amounts, but no scientific plan has been devised or adopted by any, nor are the orders in accord

as to any particular plan. Nearly every order has a method of its own, and as none are on scientific principles ultimate failure is still as certain as before.

The value of co-operation has been recognized by some orders and a national body formed which meets annually to consider the problems of the business. But the difficulty of agreement upon a scientific subject between men unfamiliar with the principles of life insurance is manifest at all such meetings. A majority of the older orders have no reserve provision, while many of those organized within the past ten years have provided for some form of reserve. Accordingly there is a cleavage along the line of reserves and no reserves, the former disclaiming any connection with the latter.

It must be conceded, however, that the experience of the fraternals affords abundant scope for investigation and supplies data of an invaluable character in connection with mortality statistics. Orders comprising the National Fraternal Congress a few years since contributed their mortality experience from which a mortality table has been compiled, and various tables of premiums for the whole of life calculated which are recommended for use by fraternal orders as minimum rates. The mortality table and life expectancy deduced therefrom is herewith given:

Fraternal Congress Mortality Table.

Ag	No. Living.	No. Dying.	Probability of Dying.	Age.	No. Living.	No. Dying.	Probability of Dying.
20	100,000	500	.0050000	40	89,251	640	.0071708
21	99,500	501	.0050352	41	88,611	660	.0074483
22	98,999	502	.0050708	42	87,951	683	.0077657
23	98,497	503	.0051068	43	87,268	708	.0081129
24	97,994	505	.0051535	44	86,560	734	.0084797
25	97,489	507	.0052006	45	85,826	761	.0088668
26	96,982	510	.0052587	46	85,065	790	.0092870
27	96,472	513	.0053176	47	84,275	822	.0097538
28	95,959	517	.0053877	48	83,453	857	.0102693
29	95,442	522	.0054693	49	82,596	894	.0108238
30	94,920	527	.0055520	50	81,702	935	.0114440
31	94,393	533	.0056466	51	80 767	981	.0121460
32	93,860	540	.0057532	52	79,786	1,029	.0128970
33	93,320	548	.0058723	53	78,757	1,083	.0137512
34	92,772	557	.0060040	54	77,674	1,140	.0146767
35	92,215	567	.0061487	55	76,534	1,202	.0157054
36	91,648	578	.0063067	56	75,332	1,270	.0168587
37	91,070	591	.0064895	57	74,062	1,342	.0181200
38	90,479	606	.0066977	58	72,720	1,418	.0194994
39	89,873	622	.0069209	59	71,302	1,501	.0210513

FRATERNAL CONGRESS MORTALITY TABLE—*Continued.*

Age.	No. Living.	No. Dying.	Probability of Dying.	Age.	No. Living.	No. Dying.	Probability of Dying.
60	69,801	1,588	.0227504	80	20,270	2,799	.1380858
61	68,213	1,681	.0246434	81	17,471	2,659	.1521951
62	66,532	1,778	.0267240	82	14,812	2,485	.1677694
63	64,754	1,880	.0290330	83	12,327	2,280	.1849599
64	62,874	1,985	.0315711	84	10,047	2,050	.2040410
65	60,889	2,094	.0343904	85	7,997	1,800	.2250844
66	58,795	2,206	.0375202	86	6,197	1,539	.2483460
67	56,589	2,318	.0409620	87	4,658	1,277	.2741520
68	54,271	2,430	.0447753	88	3,381	1,023	.3025732
69	51,841	2,539	.0489767	89	2,358	788	.3341815
70	49,302	2,645	.0536489	90	1,570	579	.3687898
71	46,657	2,744	.0588122	91	991	404	.4076690
72	43,913	2,832	.0644912	92	587	264	.4497445
73	41,081	2,909	.0708113	93	323	161	.4984520
74	38,172	2,969	.0777795	94	162	89	.5493827
75	35,203	3,009	.0854757	95	73	44	.6027397
76	32,194	3,026	.0939927	96	29	19	.6551724
77	29,168	3,016	.1034010	97	10	7	.7000000
78	26,152	2,977	.1138345	98	3	3	1.0000000
79	23,175	2,905	.1253506				

Life Expectancy.

Age.	Years.	Age.	Years.	Age.	Years.	Age.	Years.	Age.	Years.
20	45.6	36	33.1	52	20.7	68	10.1	84	3.3
21	44.9	37	32.3	53	19.9	69	9.5	85	3.0
22	44.1	38	31.5	54	19.2	70	9.0	86	2.8
23	43.3	39	30.7	55	18.5	71	8.5	87	2.5
24	42.5	40	29.9	56	17.8	72	8.0	88	2.3
25	41.8	41	29.1	57	17.1	73	7.5	89	2.1
26	41.0	42	28.3	58	16.4	74	7.0	90	1.9
27	40.2	43	27.5	59	15.7	75	6.6	91	1.7
28	39.4	44	26.8	60	15.0	76	6.2	92	1.5
29	38.6	45	26.0	61	14.4	77	5.7	93	1.4
30	37.8	46	25.2	62	13.7	78	5.3	94	1.2
31	37 0	47	24.4	63	13.1	79	5.0	95	1.1
32	36.2	48	23.7	64	12.4	80	4.6	96	1.0
33	35.4	49	22.9	65	11.8	81	4.3	97	0.8
34	34.6	50	22.2	66	11.2	82	3.9	98	0.5
35	33 9	51	21.4	67	10.7	83	3.6		

The following table shows, first, the natural premiums which should be collected to provide for the annual cost, and second, the net annual level premiums from age at entry, per $1,000 of insurance, based on the foregoing table. The level

rates are on a four per cent. interest basis, and involve the maintenance of a reserve:

Age.	Natural Premium.	Net Annual Level Rate.	Age.	Natural Premium.	Net Annual Level Rate.	Age.	Natural Premium.
20	$5.00	....	47	$9.80	$26.97	73	$70.80
21	5.00	$10.62	48	10.30	28.20	74	77.80
22	5.10	10.92	49	10.80	29.51	75	85.50
23	5.10	11.24	50	11.40	30.91	76	94.00
24	5.20	11.57	51	12.10	32.39	77	103.40
25	5.20	11.92	52	12.90	33.97	78	113.80
26	5.30	12.28	53	13.70	35.65	79	125.40
27	5.30	12.67	54	14.70	37.45	80	138.50
28	5.40	13.08	55	15.70	39.36	81	152.20
29	5.50	13.51	56	16.90	41.41	82	167.80
30	5.50	13.96	57	18.10	43.60	83	185.00
31	5.60	14.43	58	19.50	45.94	84	204.00
32	5.80	14.94	59	21.10	48.45	85	225.10
33	5 90	15 47	60	22.80	51.13	86	248.30
34	6.00	16.03	61	24.60	54.01	87	274.20
35	6.10	16.62	62	26.70	....	88	302.60
36	6.30	17.24	63	29.00	....	89	334.20
37	6.50	17.90	64	31.60	....	90	368.80
38	6.70	18.60	65	34.40	....	91	407.70
39	6.90	19.34	66	37.50	....	92	449.70
40	7.20	20.11	67	41.00	....	93	498.50
41	7.40	20.93	68	44.80	....	94	549.40
42	7.80	21.80	69	49.00	....	95	602.70
34	8.10	22.72	70	53.60	....	96	655.00
44	8.50	23.69	71	58.80	....	97	700.00
45	8.90	24.72	72	64 50	....	98	1,000.00
46	9.30	25.81					

The recommendation of the committee having charge of the mortality investigation above referred to was to the effect that the net rates submitted should be adopted as a minimum. In other words, the experience showed that fraternal orders could not safely do business if they levied and collected assessments amounting to less than the annual cost shown in the natural premium column, increasing the assessments each year in accordance with the age of the members. Any fraternal desiring to keep the premium level, as of age at entry, should adopt the net annual level rate. Some orders provide for a step-rate, under which all persons between certain ages pay the same rate until they pass into the next five-year-age group. For those orders the following minimum schedule was recommended, based on the natural premium:

Ages.	Net Annual Rate Per $1000.	Ages.	Net Annual Rate Per $1000.
21–25	$5.11	46–50	$10.25
26–30	5.40	51–55	13.82
31–35	5.93	56–60	19.60
36–40	6.71	61	54.01
41–45	8.14		

At age sixty-one the committee recommended that those still desiring to keep up their insurance should be raised to the level rate, which, of course, remains unchanged for the balance of life.

The future of the fraternal orders in this country is a matter of considerable interest to millions of people. That they cannot continue along their present lines is certain, and as all investigations undertaken by them lead to the same conclusion, that only a level premium and an increasing reserve fund for every year of the policy can save them, it is to be hoped that they will profit by the lesson and put their business on the only sure and firm foundation.

CHAPTER XV.

INTEREST.—INTEREST LAWS OF THE STATES.—EXPLANATION OF THE TABLES.—TABLES.

INTEREST.

Interest, in the sense of recompense for money lent, originated very early in the world's history. There are frequent allusions to it in the Scripture, under the title of "*usury*," which was the old English word for interest.

Robertson tells us that the fixed rate of interest in the 12th century was *twenty* per cent. In 1560 it was fixed in Spain, Germany, and Flanders, by the emperor, Charles V., at *twelve* per cent. Not until the 15th century were *Christians* allowed to receive interest on money. Jews were the only usurers. The lowest rate of interest in Athens was *ten* per cent. per annum, and the highest *thirty-six* per cent. In Rome similarly exorbitant rates were exacted. About the year B. C. 346, the rate was limited to *five* per cent.; and five years later, the practice of taking interest for money was forbidden, altogether, and he who received more than he advanced was rendered liable to four-fold restitution. The earliest enactment upon the subject mentioned in English history, was A. D. 1197, *forbidding Christians to take interest for money.* In 1546, in the 37th year of the reign of Henry VIII., an Act was passed limiting the legal rate of interest, in England, to *ten* per cent. per annum, but it was repealed. May 1st., 1552. This last Act was entitled "*A Bill against Usurie.*" and re-enacted the prohibitions contained in previous Acts, with similar penalties. The Act of 1552, was in force until 1571, when the legal rate was fixed at *ten* per cent. This continued until 1624, when the rate was reduced to *eight* per cent., and the word "*interest*" was first used instead of *usury;* it was afterwards reduced to six per cent., and, in 1714 to *five* per cent., remaining so, with one or two exceptions, for a few years, when it was suspended and still remains so.

Most other countries have, at some period of their history, found it necessary to limit the rate of interest. In 1228 the rate was fixed, at Verona, at *twelve and one-half* per cent., per annum. In 1242, James I., King of Aragon, fixed it at *eighteen* per cent.

In 1270 the legal rate at Modena was twenty per cent. There is an edict of Phillip Augustus, near this period (1272), limiting the Jews, in France, to forty-eight per cent! In 1311 Phillip IV. fixed the interest that might be legally exacted in the fairs of Champagne at twenty per cent. In 1336 the Republic of Florence borrowed money of individuals upon an assignment of taxes at fifteen per cent. In 1490, at Piacenza, the rate was as high as *forty* per cent. In 1491, *the first public sanction, by the Popes,* to the payment of interest, was given! The price of the Public Funds is perhaps the best criterion in any country, and has been taken as such by the most experienced writers on the subject. The Public Funds indicate the abundance or scarcity of money; are affected by war and peace, and by national prosperity or adversity. They may therefore be termed the national thermometer. As the price of the Public Funds goes down, the rate of interest rushes up. War and scarcity operate in this direction, and afford us another remarkable instance of the operation of the law of compensation. War and famine accelerate the rate of mortality, but they also improve the rate of interest, so it is probable that Assurance Offices with large accumulation of funds, realize, under such conditions, as much by *excess of interest* on their investments as they lose by the excess of mortality.

The relative effects of *simple* and *compound* interest may be seen in the following:

TABLE No. 2.

Rate per cent. per annum.	At simple interest it will double.	At compound interest it will double.
2	In 50 years	In 35 years
2½	" 40 "	" 28 "
3	" 33⅓ "	" 23½ "
3½	" 28½ "	" 20¼ "
4	" 25 "	" 17½ "
4½	" 22¼ "	" 15¾ "
5	" 20 "	" 14¼ "
6	" 16½ "	" 12 "
7	" 14¼ "	" 10¼ "
8	" 12½ "	" 9 "
9	" 9 "	" 8 "
10	" 10 "	" 7¼ "

Mr. Francis Bailey calculated, up to the year, 1810, that, if one penny had been put out at five per cent., *compound* interest, at the birth of Christ, it would have amounted to more money than could be expressed by 357 millions of Globes, each equal to the earth in magnitude, all of solid gold of standard quality, worth, at the mint price, three pounds, seventeen shillings and a half penny, per ounce; whereas, if the penny had been put out

at the same rate, at *simple* interest, the amount in the same time would have been only *seven shillings and seven pence half penny!!* **Mr. Hillman** extended the calculation up to the end of the year, 1846, giving as the result, two thousand one hundred and seven millions, five hundred and thirty thousand, eight hundred and sixty-four worlds of solid gold! Supposing the diameter of the world to be 8,000 miles, these globes, placed in a straight line, would reach into space sixteen billions, eight hundred and sixty thousand two hundred and forty-six millions, nine hundred and twelve thousand miles, quantities too large for human comprehension. **(C. Walford—1867.)**

The practical advantage in saving and compounding, even *small* sums of money, for a term of years, is shown by the following:

EVERY MAN, AT AGE 50, who has saved $1.25, per day since he was 21 years old, and compounded it, annually, at 4 per cent., is worth $25,000! 88 cents per day at 6 per cent.

EVERY MAN, AT AGE 55, who has saved $1.51 per day, since he was 21 years old, and compounded it, annually, at 4 per cent., is worth $40,000! Only $1.00 per day, at 6 per cent:

EVERY MAN, AT AGE 60, who has saved $1.75, per day, since he was 21 years old, and compounded it, annually, at 4 per cent., is worth $60,000!!

TABLE NO. 3.

INTEREST LAWS OF THE STATES.

State.	Rate per cent.		Penalty of Usury.
	Legal.	By Special Contract.	
Alabama.....	8	8	Loss of interest
Arizona.....	7	No limit	None
Arkansas	6	10	Forfeiture of principal and interest
California	7	No limit	None
Colorado	8	No limit	None. (8 per cent allowed on town and county bonds.)
Connecticut..	6	6	None
Delaware	6	6	Double amount of loan
Dist. of Columbia	6	10	Forfeiture of all interest
Florida.....	8	10	Forfeiture of all interest
Georgia.....	7	8	Forfeiture of excess of lawful rate
Idaho.....	7	12	Loss of interest by tender; 10 per cent from borrower for school fund
Illinois.....	5	7	Forfeiture of all interest
Indian Territory.....	6	10	Forfeiture of interest.
Indiana.....	6	8	Forfeiture of interest over 6 per cent
Iowa	6	8	Forfeiture of interest and costs
Kansas.....	6	10	Forfeiture of excess of interest
Kentucky	6	6	
Louisiana.....	5	8	Forfeiture of interest
Maine.....	6	No limit	None
Maryland	6	6	Forfeiture of excess of interest
Massachusetts	6	No limit	None
Michigan.....	6	8	Forfeiture of interest
Minnesota	7	10	Forfeiture of principal
Mississippi ...	6	10	Forfeiture of interest
Missouri.....	6	8	Forfeiture of all interest
Montana.....	10	No limit	None
Nebraska	7	10	Forfeiture of all interest and costs
Nevada.....	7	No limit	None
New Hampshire	6	6	Forfeiture 3 times excess of interest
New Jersey...	6	6	Forfeiture of all interest and costs
New Mexico..	6	12	Forfeiture twice amount and $100 fine
New York....	6	6	Forfeiture of contract; punishable as misdemeanor
NorthCarolina	6	6	Forfeiture of twice amount paid
North Dakota.	7	12	Forfeiture of entire interest
Ohio.....	6	8	Forfeiture of excess of interest

INTEREST LAWS.—*Continued.*

State.	Rate per cent.		Penalty of Usury.
	Legal.	By Special Contract.	
Oklahoma....	7	12	Forfeiture of interest
Oregon	8	10	Forfeiture of interest and principal
Pennsylvania.	6	6	Forfeiture of excess interest
Rhode Island.	6	No limit	None
SouthCarolina	7	8	Forfeiture of double the excess
South Dakota	7	12	Forfeiture of all interest
Tennessee....	6	6	Forfeiture excess interest
Texas.....	6	10	Forfeiture of all interest
Utah	8	No limit	None
Vermont.....	6	6	Forfeiture of interest
Virginia.....	6	6	Forfeiture of interest
Washington...	7	12	Forfeiture from principal of double illegal interest
West Virginia.	6	6	Forfeiture of excess interest
Wisconsin....	6	10	Forfeiture of all the interest
Wyoming	8	12	Interest and costs

EXPLANATION OF THE TABLES.

Table No. 1.—Col. (1) is made up as follows: The legal reserve, for instance, Actuaries' 4% on $1,000 of insurance, Ordinary Life Plan, issued at age 10, is $4.115 at the end of the first policy year. The present value of $4.115, for one year, 4 per cent. interest, is $3.96, and, therefore, this $3.96 at interest for one year—until end of first policy year—exactly equals the legal reserve at end of year. The $3.96 is the "Reserve Element" or germ, that produces the legal reserve, end of year. It is not the *legal reserve* at the beginning of the year—that is the net premium, or $10.43—but it is the "*Reserve Element*," as we call it. In a similar manner all the reserve elements at the different ages, from 10 to 99, inclusive, going to make up Col. (1), are produced.

Col. (2) is made up as follows: Confining ourselves to amount and kind of insurance, as above, and the age of entry, the net annual premium, as stated above, is $10.43. This is composed of the reserve element and the mortality element. The reserve element is $3.96, and, taking it from the net annual premium, $10.43, leaves $6.47, which is the mortality element. The other

mortality elements are found in a similar manner, and all of them from age 10 to age 99, constitute Col. (2).

Col. (3) is found by adding Col. (1) to Col. (2), which, at age 10, gives $10.43, and taking one-third of it, $3.48, we have the expense element. Similarly with reference to all the other ages.

Col. (4) is columns (1), (2), and (3) added together. At age 10, it is $3.96+$6.47+$3.48, equals $13.91; and similarly with reference to all the ages from 10 to 99, inclusive. These three columns constitute the elements of the gross level premiums, *the first year*, for $1,000 of ordinary life insurance, at the ages named, when they are based on the Actuaries' Table of Mortality and 4 per cent. interest. The elements of other kinds of premiums—Limited-payment Life, Endowment, etc., etc.—may be ascertained in a similar manner by using the reserve end first policy year, net premium, etc., etc., applicable to these several kinds of insurance.

Table No. 1½.—Col. (1) is identical with Col. (6), Table No. 16, and is ascertained by mathematical calculations. Col (2) is one-third of Col. (1). Col. (3) is columns (1) and (2) added together. It is the net natural premium loaded thirty-three and one-third per cent.

Table No. 2.—No explanation required.

Table No. 3.—No explanation required.

Table No. 4.—*Required the amount of $1.00 per annum, at 3 per cent., simple interest, for five years.* One dollar is on interest for five years; one for four; one for three; one for two, and one for *one* year. The interest on the first dollar invested is three cents per year for five years, amounting to 15 cents. The interest on the second dollar invested is 3 cents per year for 4 years, amounting to 12 cents. The interest on the third dollar amounts to 9 cents; on the fourth dollar, 6 cents; and on the fifth dollar, 3 cents. These different sums—15 cents, 12 cents, 9 cents, 6 cents and 3 cents—added together amount to 45 cents, which added to the principle—$5.00—gives $5.45. The same result would be ascertained in Col. (1) at the right hand of (5) in the year column, *at a glance;* and similarly with reference to any other rate of interest, for any time, named in the table. To ascertain the amount of $100, $500, or any other sum, first find the amount of $1.00 by the table, and then multiply this by the number of dollars.

Table No. 5.—*What will $1.00 amount to, compounded, annually, at 6 per cent. interest, in 30 years?* By looking at Col. (6), in the table opposite (30) in the year column, we find $5.74, the answer. For 40 years, it amounts to $10.29, and so on. For other rates, times and amounts, first ascertain the amount of

$1.00 by the table, and then multiply this result by the number of dollars.

Table No. 6.—*What will $1.00 per annum amount to, compounded, annually, at 6 per cent. interest, in 30 years?* In Col. (6) of the Table opposite (30) in the year column, we find $83.80 the answer; $40 per annum thus compounded would amount to 40 times $83.80, or $3,352, and similarly with reference to other amounts, at other rates of interest for a longer or shorter time.

Table No. 7.—*How much will $1.00 per annum, for 10 years, compounded, annually, at 5 per cent. interest, amount to in 40 years?* In Col. (5), opposite (40) in the year column, we find $57.08 the answer. $80 per annum thus invested would amount to eighty times $57.08, or, $4,566.40, and similarly with reference to other amounts and rates for a longer or shorter time. The annual investment in this table, whatever it may be, terminates at the end of the first ten years; but the *compounding* continues until the end of the time designated.

Table No. 8.—*How much will $1.00 per annum for 15 years, compounded annually, at 4 per cent. interest, amount to in 30 years?* In Col. (4) opposite (30) in the year column, we find $37.50 the answer. $100 per annum thus invested would amount to 100 times $37.50, or $3,750, and similarly with reference to other amounts and rates, for a longer or shorter time.

Table No. 9.—*What will $1.00 per annum for 20 years, compounded, annually, at 6 per cent. per annum, amount to in 40 years?* In Col. (6) opposite (40) in the year column, we find $125.05 the answer. $90 per annum thus invested would amount to 90 times $125.05, or $11,254.50, and similarly with reference to other amounts and rates of interest, for a longer or shorter time.

Table No. 10.—*If $1.00 be due and payable 40 years hence, and money will earn 4 per cent. per annum, compound interest, during that time, what is the present value of the dollar?* In Col. (3), opposite (40) in the year column, we find $.2083—nearly 21 cents—the answer; that is to say 21 cents invested 40 years, and made to earn 4 per cent. compound interest, annually, will just exactly amount to the $1 in 40 years. Twenty-one cents paid down to-day, or $1 paid in 40 years from now, are equivalent sums, if money be worth 4 per cent. per annum *compound* interest. The present value of $50 would be 50 times $.2083, or $10.415.

Table No. 11.—*What is a contract, requiring the payment of $1 at the end of evecy year for the next 40 years, worth, now, assuming money to be worth 5 per cent. compound interest?* In Col. (5) opposite (40) in the year column, we find $17.1591 the answer. In other words $17.1591, paid down in one sum is equivalent to

the payment of $1 at the end of every year for 40 years. Compare Table No. 11 with Table No. 6.

Table No. 12.—*How much money must be invested every year, and compounded, annually, at 6 per cent., to amount to $50,000 in 25 years?* In Col. (6) opposite (25) in the year column, we find $17.20. This is the uniform annual investment requisite to produce $1,000, at the rate and for the time assumed. To produce $50,000, the annual investment must therefore be 50 times $17.20, or $860, the answer.

Table No. 13.—*How much money must be invested, every year, for 10 years, only, and compounded, annually, at 6 per cent. interest, to amount to $1,000 in 20 years, from beginning of the investing period?* In Col. (6) opposite (20) in the year column, we find $39.97 the answer. To produce $50,000, multiply the $39.97 by 50, making $1,998 50; and similarly with reference to any other amounts, and rates of interest.

Table No. 14.—*How much money must be invested, every year, for 15 years, only, and compounded, annually, at 4 per cent. interest, to amount to $1,000 in 30 years, from the beginning of investing period?* In Col. (4) opposite (30) in the year column we find $26.66, the answer. To produce $10,000 the annual investment must be ten times $26.66, and similarly with reference to other amounts.

Table No. 15.—*How much money must be invested, every year, for 20 years, only, and compounded, annually, at 8 per cent. interest, to amount to $1,000 in 33 years?* In Col. (8) opposite (33) in the year column, we find $7.44, the answer, and similarly with reference to other amounts, etc.

Table No. 16.—This is the celebrated Actuaries' Table of Mortality, the history of which has been given in another part of this book, with several other columns added. Columns (1) and (2) constitute the table, *proper*. Col. (3) is obtained by dividing the number in Col. (2) opposite each age by the number in Col. (1) opposite the same age. Col. (1) represents 100,000 persons *living* at age 10, at the *beginning* of the year, and Col. (2) shows that 676 of them *died during* the year. 99,324 lived to be 11 years old, but 674 of them died before they became 12 years old, and so on, until they *all died*, only one single person of the 100,000 at age 10 reaching the age of 99, and he dies before attaining the age of 100!

Column (3) is *very instructive*. It shows that at age 20, over *seven* persons die during a year out of 1,000 living at the beginning of the same year; at age 25, nearly *eight* die; at 30, nearly *eight and one-half;* at 35, more than *nine and one-quarter;* at 40, more than *ten and one-third;* at 45, nearly *twelve and one-quarter;*

at 50, nearly *sixteen;* at 55, nearly *twenty-two;* at 60, over *thirty;* at 65, over *forty-four;* at 70, nearly *sixty-five;* at 75, over *ninety-five;* at 80, over *one hundred and forty;* at 85, over *two hundred and five;* at 90, nearly *three hundred and twenty-four;* at 95, over *five hundred and eighty-four;* and, at age 99, **one thousand persons die during the year out of one thousand living at the beginning of the year.** Taking the same number of persons at each of the ages, and noting the comparative number of deaths; we find that more than twice as many die at 50 as at 25; more than twice as many at 61 as at 50; nearly twice as many at 70 as at 61; more than twice as many at 80 as at 70, and so on. The per cent. of deaths increases very rapidly after 55, when many of our assessment companies cease grading their rates, if, indeed, they grade them at all after entry!

Column (4) gives the expectation of life at the different ages. For example, at age 10, the average of after life is 48 years and 36-100 of a year; at age 32, it is about thirty-three years, and so on.

Column (5) gives the *net* level annual premiums for insuring $1,000 for life, at the different ages. These premiums loaded from twenty-five to forty per cent., varying with different companies, constitute the table rates found in the rate books of Level Premium Companies, for $1,000 of ordinary life insurance.

Column (6) gives the natural premiums at the different ages. This column is the basis of rates for the Natural Premium Companies, and the better class of Assessment Associations, of which much has been said in previous pages.

Table No. 17.—Remarks similar to those made with reference to Table No. 16 can be appropriately made with reference to this table. Both tables are very extensively used.

Table No. 18.—Fully explained.

Table No. 19.—Fully explained and frequently referred to in other pages.

Other Tables, A, B, C, D, etc., etc., are used in explanation of facts and principles stated, and are readily understood in the application thus made of them.

TABLE

Showing the elements of which a Level Annual Premium is composed, based on the Actuaries' Table

Age.	Reserve element.	Mortality element.	Expense element.	Gross Level premium.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.
10	$3.96	$6.47	$3.48	$13.91
11	4 13	6.50	3.54	14.17
12	4.32	6.52	3.61	14.45
13	4.51	6.56	3.69	14.76
14	4.70	6.60	3.77	15.07
15	4.90	6.64	3.85	15.39
16	5.10	6.70	3.93	15.73
17	5.31	6.76	4.02	16.09
18	5.54	6.81	4.12	16.47
19	5.76	6.88	4.22	16.86
20	5.98	6.97	4.32	17 27
21	6.20	7.07	4.43	17.70
22	6.48	7.13	4.54	18 15
23	6.74	7.22	4.66	18.62
24	7.02	7.31	4.78	19.11
25	7.31	7.41	4.91	19.63
26	7.61	7.52	5.04	20.17
27	7.92	7.64	5.18	20.74
28	8.25	7.76	5.33	21.34
29	8.59	7.89	5.49	21.97
30	8.95	8.02	5.66	22.63
31	9.34	8.15	5.83	23.32
32	9.72	8.32	6.01	24.05
33	10.13	8.49	6.20	24.82
34	10.50	8.73	6.40	25.63
35	11.04	8.88	6.62	26.49
36	11.53	9.01	6.85	27.39
37	12.07	9.19	7.09	28.35
38	12.62	9.40	7.34	29.36
39	13.22	9.60	7.61	30.43
40	13.86	9.82	7.89	31.57
41	14.54	10.05	8.19	32.78
42	15.25	10.30	8.52	34.07
43	15.95	10.64	8.86	35.45
44	16.63	11.05	9.23	36.91
45	17.31	11.54	9.61	38.46
46	17.97	12.11	10.03	40.11
47	18.64	12.75	10.46	41.85
48	19.33	13.44	10.92	43.69
49	20.06	14.17	11.41	45.64
50	20.78	15.00	11.92	47.70
51	21.53	15.89	12.47	49.89
52	22.29	16.86	13.06	52.21
53	23.08	17.92	13.66	54.66
54	23.90	19.05	14.32	57.27

No. 1.

nual Life Premium for $1,000 of Insurance is of Mortality, and 4 per cent. interest.

Age.	Reserve element.	Mortality element.	Expense element.	Gross Level Premium.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.
55	$24.73	$20.30	$15 01	$ 60.04
56	25.59	21.64	15.75	62.98
57	26.50	23.07	16.53	66.10
58	27.42	24.65	17.35	69.42
59	28.37	26.35	18.25	72.97
60	29.27	28.29	19.19	76.75
61	30.20	30.37	20.19	80.76
62	31.11	32.67	21.26	85.04
63	32.03	35.17	22.40	89.60
64	32.93	37.91	23.61	94.45
65	33.84	40.88	24 90	99.62
66	34.70	44.15	26.28	105.13
67	35.58	47.66	27.74	110.98
68	36.45	51.46	29.31	117.22
69	37.36	55.53	30.97	123.86
70	38.25	59.95	32.74	130.94
71	39.15	64.72	34.62	138.49
72	40.06	69.85	36.64	146.55
73	40.97	75.39	38.79	155.15
74	41.89	81.36	41.08	164.33
75	42.82	87.79	43.54	174.15
76	43.80	94.69	46.16	184.65
77	44.75	102.19	48.95	195.89
78	45.67	110.31	51.99	207.97
79	44.69	118.99	55.23	220.91
80	47.80	128.60	58.70	234.80
81	49.16	138.16	62.44	249.76
82	50.87	148.62	66.49	265.98
83	52.95	159.83	70.93	283.71
84	55.58	171.84	75.81	303.23
85	58.53	185.20	81.24	324.97
86	61.87	200.16	87.34	349.37
87	65.68	217.01	94.23	376.62
88	69.62	236.61	102.08	408.31
89	73.50	259.65	111.05	444.20
90	77.70	286.20	121.30	485.20
91	81.76	317.51	133.09	532.36
92	84.54	355.41	146.65	586.59
93	85.54	400.53	162.02	648.09
94	84.43	452.86	179.09	716.38
95	74.38	519.05	197.57	790.28
96	62.38	583.24	215.21	860.83
97	89.04	604.04	231.03	924.11
98	186.34	581.40	255.91	1,023.65
99	961.54		320.51	1,282.05

TABLE

Showing the elements of which a Natural based on the Actuaries' Table of

Age.	Mortality element.	Expense element.	Gross Natural Premiums,
	Col. 1.	Col. 2.	Col. 3.
10	$6.50	$2.17	$ 8.67
11	6.53	2.18	8.71
12	6.55	2.19	8.74
13	6.59	2.20	8.79
14	6.63	2.21	8.84
15	6.68	2.23	8.91
16	6.73	2.24	8.97
17	6.79	2.26	9.05
18	6.86	3.29	9.15
19	6.93	2.31	9.24
20	7.01	2.34	9.35
21	7.09	2.36	9.45
22	7.18	2.39	9.57
23	7.27	2.42	9.69
24	7.37	2.46	9.83
25	7.47	2.49	9.96
26	7.58	2.53	10.11
27	7.70	2.57	10.27
28	7.83	2.61	10.44
29	7.96	2.65	10.61
30	8.10	2.70	10.80
31	8.25	2.75	11.00
32	8.41	2.80	11.21
33	8.58	2.86	11.44
34	8.75	2.92	11.67
35	8.93	2.98	11.91
36	9.12	3.04	12.16
37	9.31	3.10	12.41
38	9.53	3.18	12.71
39	9.74	3.25	12.99
40	9.95	3.32	13.28
41	10.20	3.40	13.60
42	10.48	3.49	13.97
43	10.82	3.61	14.43
44	11.25	3.74	15.00
45	11.74	3.91	15.65
46	12.35	4.12	16.47
47	13.00	4.33	17.33
48	13.71	4.57	18.28
40	14.48	4.83	19.31
50	15.33	5.11	20.44
51	16.25	5.42	21.67
52	17.26	5.75	23.01
53	18.36	6.12	24.48
54	19.53	6.51	26.04

No. 1½.

Annual Life Premium for $1,000 is composed, Mortality, and 4 per cent. interest.

Age.	Mortality element.	Expense element.	Gross Natural Premium.
	Col. 1.	Col. 2.	Col. 3.
55	$20.83	$ 6.91	$ 27.77
56	22.24	7.41	29.65
57	23.73	7.91	31.64
58	25.37	8.46	33.83
59	27.16	9.05	36 21
60	29.17	9.72	38.89
61	31.36	10.45	41.81
62	33.77	11.26	45.03
63	36.38	12.13	48.51
64	39.26	13.09	52.35
65	42.39	14.13	56.52
66	45.78	15.26	61.04
67	49.49	16.49	65.98
68	53.49	17.83	71.32
69	57.78	19.26	77.04
70	62.44	20.81	83.25
71	67.46	22.49	89.95
72	72.89	24.29	97.18
73	78.73	26.24	104.97
74	85.07	28.36	113.43
75	91.89	30.63	122.52
76	99.21	33.07	132.28
77	107.18	35.73	142.91
78	115.81	38.60	154.41
79	125.06	41.69	166.75
80	135.01	45.00	180.01
81	145.61	46.40	192.01
82	156.92	52.31	209.23
83	169.15	56 38	225.53
84	182.38	60.79	243.17
85	197.21	65.74	262.95
86	213.92	71.31	285.23
87	232.92	77.64	310.56
88	255.07	85.02	340.09
89	281.14	93.71	374.85
90	311.28	103.76	415.04
91	347.10	115.70	462.80
92	389.68	129.89	519.57
93	439.64	146.55	586.19
94	496.45	165.48	661.93
95	561.80	187.27	749.07
96	623.70	207.90	831.60
97	665.68	221.89	887.57
98	721.15	240.38	961.53
99	961.54	320.51	1,282.05

TABLE

Showing how much $1.00 per annum from 1 to

Years.	3 Per cent.	4 Per cent.	5 Per cent.	6 Per cent.
	Col. 1.	Col. 2.	Col 3	Col. 4.
1	$1.03	$1.04	$1.05	$1.06
2	2.09	2.12	2.15	2.18
3	3.18	3.24	3.30	3.36
4	4.30	4.40	4.50	4.60
5	5.45	5.60	5.75	5.90
6	6.63	6.84	7.05	7.26
7	7.84	8.12	8.40	8.68
8	9.08	9.44	9.80	10.16
9	10.35	10.80	11.25	11.70
10	11.65	12.20	12.75	13.30
11	12.98	13.64	14.30	14.96
12	14 34	15.12	15.90	16.68
13	15.73	16.64	17.55	18.46
14	17.15	18.20	19.25	20.30
15	18.60	19.80	21.00	22.20
16	20.08	21.44	22.80	24.16
17	21.59	23.12	24.65	26.18
18	23.13	24.84	26.55	28.26
19	24.70	26.60	28 50	30.40
20	26.30	28.40	30.50	32.60
21	27.93	30.24	32.55	34.86
22	29.59	32.12	34.65	37.18
23	31.28	34.04	36.80	39.56
24	33.00	36.00	39.00	42.00
25	34.75	38.00	41.25	44.50
26	36.53	40 04	43.55	47.06
27	38.34	42.12	45.90	49.68
28	40.18	44.24	48.30	52.36
29	42.05	46.40	50.75	55.10
30	43.95	48.60	53.25	57.90
31	45.88	50.84	55.80	60.76
32	47.84	53.12	58.40	63.68
33	49.83	55.44	61.05	66.66
34	51.85	57.80	63.75	69.70
35	53.90	60.20	66.50	72.80
36	55.98	62.64	69.30	75.96
37	58.09	65.12	72.15	79.18
38	60.23	67.64	75.05	82.46
39	62.40	70.20	78.00	85.80
40	64.60	72.80	81.00	89.20
41	66.83	75.44	84.05	92.66
42	69.09	78.12	87.15	96.18
43	71.38	80.84	90.30	99.76
44	73.70	83.60	93.50	103.40
45	76.05	86.40	96.75	107.10
46	78.43	89.24	100.05	110.86
47	80.84	92.12	103.40	114.68
48	83.28	95.04	106.80	118 56
49	85.75	98.00	110.25	122.50
50	88.25	101.00	113.75	126.50

No. 4.

will amount to, at Simple Interest, in 50 Years.

7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 5	Col. 6.	Col. 7.	Col. 8.	
$1.07	$1.08	$1.09	$1.10	1
2.21	2.24	2 27	2.30	2
3.42	3.48	3.54	3.60	3
4.70	4.80	4.90	5.00	4
6.05	6.20	6.35	6.50	5
7.47	7.68	7.89	8.10	6
8.96	9.24	9.52	9.80	7
10.52	10.88	11.24	11.60	8
12.15	12.60	13.05	13.50	9
13.85	14.40	14.95	15.50	10
15.62	16.28	16.94	17.60	11
17.46	18.24	19.02	19.80	12
19.37	20.28	21.19	22.10	13
21.35	22.40	23.45	24.50	14
23.40	24.60	25.80	27.00	15
25.52	26.88	28.24	29.60	16
27.71	29.24	30.77	32.30	17
29.97	31.68	33.39	35.10	18
32.30	34.20	36.10	38.00	19
34.70	36.80	38.90	41.00	20
37.17	39.48	41.79	44.10	21
39.71	42.24	44.77	47.30	22
42.32	45.08	47.84	50.60	23
45.00	48.00	51.00	54.00	24
47.75	51 00	54.25	57.50	25
50.57	54 08	57.59	61.10	26
53.46	57.24	61.02	64.80	27
56.42	60.48	64.54	68.60	28
59.45	63.80	68.15	72.50	29
62.55	67.20	71.85	76.50	30
65.72	70.68	75.64	80.60	31
68.96	74.24	79.52	84.80	32
72.27	77.88	83.49	89.10	33
75.65	81.60	87 55	93.50	34
79.10	85.40	91.70	98.00	35
82.62	89.28	95.94	102.60	36
86.21	93.24	100 27	107.30	37
89.87	97.28	104.69	112.10	38
93.60	101.40	109.20	117.00	39
97.40	105.60	113.80	122.00	40
101.27	109.88	118.49	127.10	41
105.21	114.24	123.27	132.30	42
109.22	118.68	128.14	137.60	43
113.30	123.20	133.10	143.00	44
117.45	127.80	138.15	148.50	45
121.67	132.48	143.29	154.10	46
125.96	137.24	148.52	159.80	47
130.32	142.08	153.84	165.60	48
134.75	147.00	159.25	171.50	49
139.25	152.00	164.75	177.50	50

TABLE

Showing how much $1.00 will amount

Years.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.
1	$1.030	$1.035	$1.040	$1.045	$1.050
2	1.061	1.071	1.082	1.092	1.103
3	1.093	1.109	1.125	1.141	1.158
4	1.126	1.148	1.170	1.193	1.216
5	1.159	1.188	1.217	1.246	1.276
6	1.194	1.229	1.265	1.302	1.340
7	1.230	1.272	1.316	1.361	1.407
8	1.267	1.317	1.369	1.422	1.478
9	1.305	1.363	1.423	1.486	1.551
10	1 344	1.411	1.480	1.553	1.629
11	1.384	1.460	1.540	1.623	1.710
12	1.426	1.511	1.601	1.696	1.796
13	1.469	1.564	1.665	1.772	1.886
14	1.513	1.619	1.732	1.852	1.980
15	1 558	1.675	1.801	1.935	2.079
16	1.605	1.734	1.873	2.022	2.183
17	1.653	1.795	1.948	2.113	2.292
18	1.702	1.858	2.026	2.209	2.407
19	1.754	1.923	2.107	2.308	2.527
20	1.806	1.990	2.191	2.412	2.653
21	1.860	2.059	2.279	2.520	2.786
22	1.916	2.132	2.370	2.634	2.925
23	1.974	2.206	2.465	2.752	3.072
34	2.033	2.283	2.563	2.876	3.225
25	2.094	2.363	2.666	3.005	3.386
26	2.157	2.446	2.773	3.141	3.556
27	2.221	2.532	2.883	3.282	3.734
28	2.288	2.620	2.999	3.430	3.920
29	2.357	2.712	3.119	3.584	4.116
30	2.427	2.807	3 243	3.745	4.322
31	2.500	2.905	3.373	3.914	4.538
32	2.575	3.007	3.508	4.090	4.765
33	2.652	3.112	3.648	4.274	5.003
34	2.732	3.221	3.794	4.466	5.253
35	2.814	3.334	3.946	4.667	5.516
36	2.898	3.450	4.104	4 877	5.792
37	2.985	3.571	4.268	5.097	6.081
38	3.075	3.696	4.439	5.326	6.386
39	3.167	3.825	4.616	5.566	6.705
40	3.262	3.959	4.801	5.816	7.040
41	3.360	4.098	4.993	6.078	7.392
42	3 461	4.241	5.193	6.352	7.762
43	3.565	4.390	5.401	6.637	8.150
44	3.672	4 543	5·617	6.936	8.557
45	3.782	4.702	5.841	7.248	8.985
46	3.895	4.867	6.075	7.574	9.434
47	4.012	5.037	6.318	7.915	9.906
48	4.132	5.214	6 571	8.272	10.401
49	4.256	5.396	6.833	8.644	10.921
50	4.384	5.585	7.107	9.033	11.467

No. 5.

to compounded annually, for 1 to 50 years.

6 Per cent.	7 Per cen.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 6.	Col. 7.	Col 8.	Col. 9.	Col. 10.	
$1.060	$ 1.070	$ 1.080	$ 1.090	$ 1.100	1
1.124	1.145	1.166	1.188	1.210	2
1.191	1.225	1.260	1.295	1.331	3
1.263	1.311	1.361	1.412	1.464	4
1.338	1.403	1.469	1.539	1.611	5
1.419	1.501	1.587	1.677	1.772	6
1.504	1.606	1.714	1.828	1.949	7
1.594	1.718	1.851	1.993	2.144	8
1.690	1.839	1.999	2.172	2.358	9
1.791	1.967	2.159	2.367	2.594	10
1.898	2.105	2.332	2.580	2.853	11
2.012	2.252	2.518	2 813	3.138	12
2.133	2.410	2.720	3.066	3.452	13
2.261	2.579	2.937	3.342	3.798	14
2.397	2.759	3.172	3.643	4.177	15
2.540	2.952	3.426	3.970	4.595	16
2.693	3.159	3.700	4.328	5.055	17
2.854	3.380	3.996	4.717	5.560	18
3.026	3.617	4.316	5.142	6.116	19
3.207	3.870	4.661	5.604	6.728	20
3.400	4.141	5.034	6.109	7.400	21
3.604	4.430	5.437	6.659	8.140	22
3 820	4.741	5.872	7.258	8.954	23
4.049	5.072	6.341	7.911	9.850	24
4.292	5.427	6.849	8.623	10.835	25
4.549	5.807	7.396	9.399	11 918	26
4.822	6.214	7.988	10.245	13.110	27
5.112	6.649	8.627	11.167	14.421	28
5.418	7.114	9.317	12.172	15.863	29
5.744	7.612	10.063	13.368	17.449	30
6.088	8.145	10.868	14.462	19.194	31
6 453	8.715	11.737	15.763	21.114	32
6.841	9 325	12.676	17.182	23.225	33
7.251	9.978	13.690	18.728	25.548	34
7.686	10.677	14.785	20.414	28.102	35
8.147	11.424	15.968	22.251	30.913	36
8.636	12.224	17.246	24.254	34.004	37
9.154	13.079	18.625	26.437	37.404	38
9.704	13.995	20.115	28.816	41.145	39
10.286	14.975	21 725	31.409	45.259	40
10.903	16.023	23.463	34.236	49.785	41
11.557	17.144	25.340	37.318	54.764	42
12.251	18.344	27.367	40.676	60.240	43
12.986	19.629	29.556	44.337	66.264	44
13.765	21.003	31.920	48.327	72.891	45
14.591	22.473	34.474	52.677	80.180	46
15.466	24.046	37.232	57.418	88.198	47
16.394	25.729	40.211	62.585	97.017	48
17.378	27.530	43.427	68.218	106.719	49
18.420	29.457	46.902	74.358	117.391	50

TABLE

Showing how much $1.00 per annum annually, for

YEARS.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col 2.	Col. 3.	Col. 4.	Col 5.
1	1.030	1.035	1.040	1.045	1.050
2	2.091	2.106	2.122	2.137	2.153
3	3.184	3.215	3 247	3.278	3.310
4	4.309	4.363	4.416	4 471	4.526
5	5.468	5.550	5.633	5.717	5.802
6	6.663	6 779	6.898	7 019	7.142
7	7.892	8.052	8.214	8.380	8.549
8	9.159	9.369	9.583	9.802	10.027
9	10.464	10.731	11.006	11.288	11.578
10	11.808	12.142	12.486	12.841	13.207
11	13.192	13.602	14.026	14.464	14.917
12	14.618	15.113	15.627	16.160	16.713
13	16 086	16.677	17.292	17.932	18.599
14	17.599	18.296	19.024	19.784	20,579
15	19.157	19.971	20.825	21.719	22.658
16	20.762	21.705	22.698	23.742	24.840
17	22.414	23.500	24.645	25.855	27.132
18	24.117	25.357	26.671	28.064	29.539
19	25.870	27.280	28.778	30.371	32.066
20	27.677	29.270	30.969	32.783	34.719
21	29.537	31.329	33.248	35.303	37.505
22	31.453	33.460	35.618	37.937	40.431
23	33.427	35.667	38.083	40.689	43.502
24	35.459	37.950	40.646	43.565	46.727
25	37.553	40.313	43.312	46 571	50.114
26	39.710	42.759	46.084	49.711	53.669
27	41.931	45.291	48.968	52.993	57.403
28	44.219	47.911	51.966	56.423	61.323
29	46.575	50.623	55.085	60.007	65.439
30	49.003	53 430	58.328	63.752	69.761
31	51.503	56.335	61.702	67.666	74.299
32	54.078	59.341	65.210	71.756	79.064
33	56.730	62.453	68.858	76.030	84.067
34	59.462	65.674	72.652	80.497	89.320
35	62.276	69.008	76.598	85.164	94.836
36	65.174	72.458	80.702	90.041	100.628
37	68.159	76.029	84.970	95.138	106.710
38	71.234	79.725	89.409	100.464	113.095
39	74.401	83.550	94.026	106.030	119.800
40	77.663	87.510	98.827	111.847	126.840
41	81.023	91.607	103.820	117.925	134.232
42	84.484	95.849	109.012	124.276	141.993
43	88.048	100.238	114.413	130.914	150.143
44	91.720	104.782	120.029	137.850	158.700
45	95.502	109.484	125.871	145.098	167.685
46	99.397	114.351	131.945	152 673	177.119
47	103.408	119.388	138.263	160.588	187.025
48	107.541	124.602	144.834	168.859	197.427
49	111.797	129.998	151.667	177.503	208.348
50	116.182	135.583	159.274	186.536	219.815

No. 6.

will amount to, compounded, 1 to 50 years.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent	Years.
Col. 6.	Col. 7	Col. 8.	Col. 9.	Col. 10.	
1.060	1.070	1.080	1.090	1.100	1
2 184	2.215	2.246	2.278	2.310	2
3.375	3.440	3.506	3.573	3.641	3
4.637	4.751	4.867	4.985	5.105	4
5.975	6.153	6.336	6,523	6.716	5
7.394	7.654	7.923	8.200	8.487	6
8.898	9.260	9.637	10.029	10.436	7
10.491	10.978	11.488	12.021	12.580	8
12.181	12.816	13.487	14.193	14.937	9
13.972	14.784	15.646	16.560	17 531	10
15.870	16.889	17.977	19.141	20.384	11
17.882	19.141	20.495	21.953	23.523	12
20.015	21.551	23.215	25.019	26.975	13
22.276	24.129	26.152	28.361	30 773	14
24.673	26.888	29.324	32.003	34 950	15
27 213	29.840	32.750	35.974	39.545	16
29.906	32.999	36.450	40.301	44.599	17
32.760	36.379	40.446	45.019	50.159	18
35.786	39.996	44.762	50.160	56.275	19
38.993	43.865	49.423	55.765	63.003	20
42.392	48.006	54.457	61 873	70.403	21
45.996	52.436	59.893	68.532	78.543	22
49.816	57.177	65.765	75.790	87.497	23
53.865	62.249	72.106	83.701	97.347	24
58.156	67.677	78.954	92.324	108.182	25
62.706	73.484	86.351	101.723	120.100	26
67.528	79.698	94.339	111.968	133.210	27
72.640	86.347	102.966	123.135	147.631	28
78.058	93.461	112.283	135.308	163.494	29
83.802	101.073	122.346	148.575	180 943	30
89.890	109.218	133.214	163.037	200.138	31
96.343	117.933	144.951	178.800	221.252	32
103.184	127.259	157.627	195.982	244.477	33
110.435	137.237	171.317	214.711	270.024	34
118.121	147.914	186.102	235 125	298.127	35
126.268	159.337	202.070	257.376	329.040	36
134.904	171.561	219.316	281.630	363.043	37
144.059	184.640	237.941	308.067	400.448	38
153 762	198.635	258.057	336.882	441.593	39
164.048	213.610	279.781	368.292	486.852	40
174.951	229.632	303.244	402.528	536.637	41
186.508	246.777	328.583	439.846	591.401	42
198.758	265.121	355.950	480.522	651.641	43
211.744	284.749	385.506	524 859	717.905	44
225.508	305.752	417.426	573.186	790.795	45
240.099	328.224	451.900	625.863	870.975	46
255.565	352.270	489.132	683.280	959.172	47
271.958	377.999	529.343	745.866	1,056.190	48
289.336	405.529	572.770	814.084	1,162.909	49
307.756	434.986	619.672	888.441	1,280.299	50

TABLE

Showing how much $1.00 per annum, for annually for

YEARS.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.
11	12.16	12.57	12 99	13.42	13.87
12	12.53	13 00	13 51	14.02	14.56
13	12.90	13.46	14.05	14.65	15.29
14	13.29	13.93	14.61	15.31	16.05
15	13.69	14.42	15.19	16.00	16.86
16	14.10	14.93	15.80	16.72	17.70
17	14.52	15.45	16.43	17.48	18.58
18	14.96	15.99	17.09	18.26	19.51
19	15.41	16.55	17.77	19.08	20.49
20	15.87	17.13	18.48	19.94	21.51
21	16.34	17.73	19.22	20.84	22.59
22	16.84	18.35	19.99	21.78	23.72
23	17.34	18.99	20.79	22.76	25.60
24	17.86	19.65	21.62	23.78	26.15
25	18.40	20.34	22.49	24.85	27.46
26	18.95	21.05	23.39	25.97	28.83
27	19.52	21.79	24.32	27.14	30.27
28	20.10	22.55	25.29	28.36	31.78
29	20.71	23.34	26.31	29.64	33.37
30	21.33	24.16	27.36	30.97	35.04
31	21 97	25.01	28.45	32.36	36.79
32	22.62	25.88	29.59	33.82	38.63
33	23.30	26.79	30.78	35.34	40.56
34	24 00	27.72	32.00	36 93	42 59
35	24.72	28.69	33.29	38.59	44.72
36	25.46	29.70	34.62	40.33	46.96
37	26.23	30.74	36.00	42.14	49.31
38	27.02	31.81	37.44	44.04	51.77
39	27.82	32.93	38.94	46.02	54.36
40	28.67	34.08	40.50	48.09	57.08
41	29.52	35.27	42.12	50.26	59.93
42	30.41	36.51	43.80	52.52	62.93
43	31.32	37.78	45.56	54.88	66.08
44	32.26	39.11	47.38	57.35	69.38
45	33.23	40.48	49.27	59.93	72.85
46	34.22	41.89	51.24	62.63	76.49
47	35.25	43.36	53.29	65.45	80.32
48	36.31	44.88	55.42	68.39	84.33
49	37.40	46.45	57.64	71.47	88.55
50	38.52	48.07	59.95	74.69	92.98

No. 7.

10 years, will amount to compounded 11 to 50 years.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10.	
14.81	15.82	16.90	18.05	19 28	11
15.70	16.93	18.25	19.67	21.21	12
16.64	18.11	19.71	21.45	23.33	13
17.64	19.38	21.29	23.38	25.67	14
18.70	20.74	22.99	25.48	28.23	15
19.82	22.19	24.83	27.77	31.06	16
21.01	23.74	26.81	30.27	34.16	17
22.17	25.40	28.96	33.00	37.58	18
23.61	27.18	31.28	35.97	41.34	19
25.02	29.08	33.78	39.20	45.47	20
26.52	32.75	36.48	42.78	50.02	21
28.11	33.30	39.40	46.58	55.01	22
29.80	35.63	42.55	50.77	60.52	23
31.59	38.12	45.95	55.34	66.57	24
33.48	40.79	49.63	60.32	73.23	25
34.98	43.64	53.60	65.74	80.56	26
37.62	46.70	57.89	71.67	88.61	27
39 88	49.97	62.52	78.11	97.47	28
42.27	53.46	67.52	85.15	107.20	29
44.81	57.21	72.92	92.80	117.94	30
47.50	61.21	78.76	101.16	129.73	31
50.35	65.50	85.06	110.27	142.70	32
53.37	70.08	91.86	120.19	156.90	33
56.57	74.99	99.21	131.01	172.68	34
59.86	80.24	107.15	142.80	189.95	35
63.56	85.85	115.72	155.65	208.94	36
67.38	91.86	124 99	169.66	229.83	37
71.42	98.29	134.98	184.93	252.80	38
75.70	105.17	145.77	201.54	278.05	39
80.25	112.54	157.44	219.72	305.90	40
85.17	120.41	170.03	239.46	336.49	41
90.16	128.84	183.63	260.99	370.08	42
95.57	137.86	198 32	284.51	407.16	43
101.31	147.51	214.19	310.14	447.88	44
107.39	157.84	231.32	338.06	492.63	45
113.83	168.89	249.83	368.47	541.71	46
120.66	180.71	269.82	401.59	596.06	47
127.90	193.36	291.40	437.79	655.67	48
135.57	206.89	314.71	477.20	721 23	49
143.71	221.38	339.89	520.14	793.45	50

TABLE

Showing how much $1.00 per annum annually for 16

Years	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.
16	19.73	20.67	21.66	22.70	23.79
17	20.32	21.39	22.52	23.71	24.98
18	20.93	22.14	23.43	24.79	26.23
19	21.56	22.92	24.36	25.90	27.54
20	22.21	23.72	25.34	27.07	28.72
21	22.88	24.55	26.35	28.29	30.36
22	23.56	25.41	27.40	29 55	31.88
23	24.27	26.30	28.50	30.89	33.48
24	25.00	27.27	29.64	32.28	35.15
25	25.74	28.16	30.82	33.73	36.91
26	26.52	29.06	32.06	35.25	38.75
27	27.31	30.18	33.34	36.83	40.69
28	28.13	31.23	34.67	38.50	42.72
29	28.98	32.33	36.06	40.22	44.87
30	29 85	33.46	37.50	42.03	47.11
31	30.74	34.63	39.00	43.93	49.46
32	31.66	35.84	40.56	45.90	51.93
33	32.61	37.10	42.19	47.97	54.53
34	33.59	38.39	43.87	50.12	57.26
35	34.60	39.74	45.63	52.39	60.12
36	35.64	41.13	47 45	54.73	63.12
37	36.71	41.97	49.35	57.20	66.28
38	37.81	44.06	51.33	59.78	69.59
39	38.94	45 60	53.38	62.47	73.07
40	40.11	47.20	55.51	65.28	76.73
41	41.31	48 05	57.74	68.21	80.56
42	42.55	50.56	60.05	71.29	84.59
43	43.83	52.33	62.45	74.50	88.82
44	45.15	54.16	64.95	77.84	93.36
45	46.50	56.05	67.54	81.34	97.92
46	47.89	58.02	70.24	85.00	102.82
47	49.33	60.05	73.05	88.80	107.96
48	50.81	62.14	75.98	92.82	113.36
49	52.34	64.32	79.01	97.00	119.03
50	53.90	66.58	82.18	101.38	124.98

No. 8.

for 15 years will amount to, compounded to 50 years.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 6.	Col. 7.	Col. 8.	Col 9.	Col. 10.	
26.15	28.77	31.67	34.88	38.44	16
27.72	30.78	34.20	38.02	42.29	17
29.39	32.94	37.04	41.44	46.52	18
31.15	35.24	39.90	45.18	51.17	19
33.02	37.71	43.08	49.24	56.27	20
35.00	40.35	46.53	53 67	61.92	21
37.10	43.18	50.26	58.50	68.11	22
39.32	46.20	54.28	63.77	74.92	23
41.68	49.43	58.62	69.51	82.41	24
44.18	52.89	63.31	75.75	90.65	25
46.84	56.60	68.37	82.57	99.71	26
49.65	60.56	73.84	90.02	109.67	27
52.62	64.79	79.75	98.12	120.65	28
55.78	69.33	86.13	106.95	132.72	29
59.13	74.18	93.02	116.57	145.98	30
62.68	79.38	100.46	127.05	160.59	31
66.44	84.93	108.50	138.50	176.64	32
70.42	90.88	117.18	150.96	194.32	33
74.65	97.24	126.55	164.55	213.74	34
79.13	104 05	136.68	179.35	235.11	35
83.88	111.33	147.61	195.50	258.63	36
88.91	119.12	159.42	213.10	284.49	37
94.24	127.46	172.18	232.28	312.94	38
99.90	136.39	185 95	253.18	344.24	39
105 89	145.93	200.83	275 97	378.67	40
112.25	156.05	216.89	300.80	416.53	41
118.98	167.08	234.25	327.88	458.19	42
126.12	178.77	252.98	357.38	503.98	43
133.69	191.29	273.22	389.48	554.30	44
141.71	204.68	295.08	424.61	609.84	45
150.21	219.01	318 69	462.77	670.68	46
159.22	234.34	344.18	504.37	737.79	47
168.77	250.74	371.71	549.82	811.71	48
178.90	268.29	401.45	599.36	892.88	49
189.64	287.07	433.57	653.32	982.09	50

TABLE

Showing how much $1.00 per annum annually for 21

Years.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col 5.
21	28.51	30.29	32.21	34.26	36.46
22	29.36	31.35	33.50	35.80	38.28
23	30.24	32.45	34.84	37.41	40.19
24	31.15	33.59	36.23	39.09	42.20
25	32.09	34.76	37.68	40.85	44.31
26	33.05	35.99	39.18	42.69	46.53
27	34.04	37.24	40.75	44.61	48.85
28	35.06	38.54	42.38	46.62	51.30
29	36.11	39.89	44.08	48.72	53.86
30	37.19	41.29	45.84	50.91	56.55
31	38.31	42.73	47.68	53.20	59.38
32	39.46	44.23	49.58	55.60	62.35
33	40.64	45.78	51.56	58.10	65.47
34	41.86	47.38	53.63	60.71	68.74
35	43.12	49.04	55.77	63.45	72.18
36	44.41	50.75	58.01	66.30	75.79
37	45.74	52.53	60.32	69.28	79.58
38	47.12	54.37	63.67	72.40	83 56
39	48.53	56.27	65.25	75.66	87.74
40	49.99	58.24	67.86	79.06	92.12
41	51.49	60.28	70.57	82.62	96.73
42	53.03	62.39	73.39	86.34	101.55
43	55.02	64.57	76.33	90.23	106.64
44	56.26	66.83	79.38	94.28	111.97
45	57.95	69.17	82.56	98.53	117.57
46	59.69	71.59	85.86	102.96	123.45
47	61.48	74.10	89.30	107.49	129.62
48	63.32	76.69	92.88	112.44	136.10
49	65.22	79.38	96.58	117.49	142.91
50	67.18	82.15	100.45	122.78	150.05

No. 9.

for 20 years will amount to, compounded to 50 years.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10	
41.33	46.94	53.38	60.78	69.30	21
43.81	50.22	57.65	66.25	76.23	22
46.44	53.73	62.26	72.22	83.86	23
49.23	57.50	67.24	78.72	92.24	24
52.18	61.53	72.62	85.80	101.47	25
55.31	65.83	78.43	93.52	111.62	26
58.63	70.44	84.70	101.94	122.77	27
62.15	75.37	91.48	111.08	135.05	28
65.88	80.65	98.80	121.11	148.55	29
69.83	86.29	106.70	131.99	163.41	30
74.02	92.33	115.13	143.87	179.75	31
78.46	98.79	124.45	156.85	197.70	32
83.17	105.71	134.41	170.96	217.48	33
88.16	113.11	145.16	186.35	239.25	34
93.45	120.62	156.78	203.12	263.16	35
99.05	129.50	169.32	221.39	289.50	36
104.99	138 56	182 86	241.33	318.45	37
111.30	148.26	197.49	263.04	350.29	38
117.98	159.55	213.29	286.72	385.32	39
125.05	169.75	230.36	312.50	423.85	40
132.56	181.63	248.79	340.65	466.22	41
140.51	194.34	268.69	371.31	512.84	42
148.94	207.94	290.19	404.73	564.12	43
157.88	222.50	313.40	441.16	620.56	44
167.35	238.07	338.47	480.86	682.61	45
177.39	254.74	365.55	524.13	750.86	46
188.03	272.57	394.80	571.31	825.96	47
199.32	291.65	426.38	622.72	908.50	48
211.28	312.07	460.49	678.76	999.41	49
223.95	333.92	497.33	739.87	1099.36	50

TABLE

Showing the present value of $1.00 due 50, in

YEARS.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.
1	.9709	.9662	.9615	.9569	.9524
2	.9426	.9335	.9246	.9157	.9070
3	.9151	.9019	.8890	.8763	.8638
4	.8885	.8714	.8548	.8386	.8227
5	.8626	.8420	.8219	.8025	.7835
6	.8375	.8135	.7903	.7679	.7462
7	.8131	.7860	.7599	.7348	.7107
8	.7894	.7594	.7307	.7032	.6768
9	.7664	.7337	.7026	.6729	.6446
10	.7441	.7089	.6756	.6439	.6139
11	.7224	.6849	.6496	.6162	.5847
12	.7014	.6618	.6246	.5897	.5568
13	.6810	.6394	.6006	.5643	.5303
14	.6611	.6178	.5775	.5400	.5051
15	.6419	.5969	.5553	.5167	.4810
16	.6232	.5767	.5339	.4945	.4581
17	.6050	.5572	.5134	.4732	.4363
18	.5874	.5384	.4936	.4528	.4155
19	.5703	.5202	.4746	.4333	.3957
20	.5537	.5026	.4564	.4146	.3769
21	.5375	.4856	.4388	.3968	.3589
22	.5219	.4692	.4220	.3797	.3419
23	.5067	.4533	.4057	.3634	.3256
24	.4919	.4380	.3901	.3477	.3101
25	.4776	.4231	.3751	.3327	.2953
26	.4637	.4088	.3607	.3184	.2812
27	.4502	.3950	.3468	.3047	.2678
28	4371	.3817	.3335	.2916	.2551
29	.4243	.3687	.3206	.2790	.2429
30	.4120	.3563	.3083	.2670	.2314
31	.4000	.3442	.2965	.2555	.2204
32	.3883	.3326	.2851	.2445	.2099
33	.3770	.3213	.2741	.2340	.1999
34	.3660	.3105	.2636	.2239	.1904
35	.3554	.3000	.2534	.2143	.1813
36	.3450	.2898	.2437	.2050	.1727
37	.3350	.2800	.2343	.1962	.1644
38	.3252	.2706	.2253	.1878	.1566
39	.3158	.2614	.2166	.1797	.1491
40	.3066	.2526	.2083	.1719	.1420
41	.2976	.2440	.2003	.1645	.1353
42	.2890	.2358	.1926	.1574	.1288
43	.2805	.2278	.1852	.1507	.1227
44	.2724	.2201	.1780	.1442	.1169
45	.2644	.2127	.1712	.1380	.1113
46	.2567	.2055	.1646	.1320	.1060
47	.2493	.1985	.1583	.1263	.1009
48	.2420	.1918	.1522	.1209	.0961
49	.2350	.1853	.1463	.1157	.0916
50	.2281	.1791	.1407	.1107	.0872

No. 10.

in any number of years, from 1 to clusive.

6 Per cent.	7 Per cen.	8 Per cent.	9 Per cent.	10 Per cent.	YEARS.
Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10.	
.9434	.9346	.9259	.9174	.9091	1
.8900	.8734	.8573	.8417	.8264	2
.8396	.8163	.7938	.7722	.7513	3
.7921	.7629	.7350	.7084	.6830	4
.7473	.7130	.6806	.6499	.6209	5
.7050	.6663	.6302	.5963	.5645	6
.6651	.6228	.5835	.5470	.5132	7
.6274	.5820	.5403	.5019	.4665	8
.5919	.5439	.5002	.4604	.4241	9
.5584	.5083	.4632	.4224	.3855	10
.5268	.4751	.4289	.3875	.3505	11
.4970	.4440	.3971	.3555	.3186	12
.4688	.4150	.3678	.3262	.2897	13
4423	.3878	.3405	.2992	.2633	14
.4173	.3624	.3152	.2745	.2394	15
.3936	.3387	.2919	.2519	.2176	16
.3714	.3166	.2703	.2311	.1978	17
.3503	.2959	.2502	.2120	.1799	18
.3305	.2765	.2317	.1945	.1635	19
.3118	.2584	.2145	.1784	.1486	20
.2942	.2415	.1987	.1637	.1351	21
.2775	.2257	.1839	.1502	.1228	22
.2618	.2109	1703	.1378	.1117	23
.2470	.1971	.1577	.1264	.1015	24
.2330	.1842	.1460	.1160	.0923	25
.2198	.1722	.1352	.1064	.0 39	26
.2074	.1609	.1252	.0976	.0763	27
.1956	.1504	.1159	.0895	.0693	28
.1846	.1406	.1073	.0822	.0630	29
.1741	.1314	.0994	.0754	.0573	30
.1643	.1228	.0920	.0691	.0521	31
.1550	.1147	.0852	.0634	.0474	32
.1462	.1072	.0789	.0582	.0431	33
.1379	.1002	.0730	.0534	.0391	34
.1301	.0937	.0676	.0490	.0356	35
.1227	.0875	.0626	.0449	.0323	36
.1158	.0818	.0580	.0412	.0294	37
.1092	.0765	.0537	.0378	.0267	38
.1031	.0715	.0497	.0347	.0244	39
.0972	.0668	.0460	.0318	.0221	40
.0917	.0624	.0426	.0292	.0201	41
.0865	.0583	.0395	.0268	.0183	42
.0816	.0545	.0365	.0246	.0166	43
0770	.0509	.0338	.0226	.0151	44
.0727	.0476	.0313	.0207	.0137	45
.0685	.0445	.0290	.0190	.0125	46
.0647	.0416	.0269	.0174	.0113	47
.0610	.0389	.0249	.0160	.0103	48
.0575	.0363	.0230	.0147	.0094	49
.0543	.0339	.0213	.0134	.0085	50

TABLE

Showing the present value of $1.00 per from 1 to

YEARS	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.
1	.9709	.9662	0.9615	0.9569	0.9524
2	1.9135	1.8997	1.8861	1.8727	1.8594
3	2 8286	2.8016	2.7751	2.7490	2.7232
4	3.7171	3.6731	3.6299	3.5875	3.5460
5	4.5797	4.5151	4.4518	4.3900	4.3295
6	5.4172	5.3286	5.2421	5.1579	5.0757
7	6.2303	6.1145	6.0021	5.8927	5.7864
8	7.0197	6.8740	6.7327	6.5959	6.4632
9	7.7861	7.6077	7.4353	7.2688	7.1078
10	8.5302	8.3166	8.1109	7.9127	7.7217
11	9.2526	9.0016	8.7605	8.5289	8.3064
12	9.9540	9.6633	9.3851	9.1186	8.8633
13	10.6350	10.3027	9.9856	9.6829	9.3936
14	11.2961	10.9205	10.5631	10.2228	9.8986
15	11.9379	11.5174	11.1184	10.7395	10.3797
16	12.5611	12.0941	11.6523	11.2340	10 8378
17	13.1661	12.6513	12.1657	11.7072	11.2741
18	13.7535	13.1897	12.6593	12.1600	11.6896
19	14.3238	13.7098	13.1339	12.5933	12.0853
20	14.8775	14.2124	13.5903	13.0079	12.4622
21	15.4150	14.6980	14.0292	13.4047	12.8212
22	15.9369	15.1671	14.4511	13.7844	13.6030
23	16.4436	15.6204	14.8568	14.1478	13.4886
24	16.9355	16.0584	15.2470	14.4955	13.7986
25	17.4131	16.4815	15.6221	14.8282	14.0939
26	17.8768	16 8904	15.9828	15.1466	14.3752
27	18.3270	17.2854	16.3296	15.4513	14.6430
28	18.7641	17.6670	16.6631	15.7429	14.8981
29	19.1885	18.0358	16.9837	16.0219	15.1411
30	19.6004	18.3920	17.2920	16 2889	15 3725
31	20.0004	18.7363	17.5885	16.5444	15.5928
32	20.3888	19.0689	17.8736	16.7889	15.8027
33	20.7658	19.3902	18.1476	17.0229	16.0025
34	21 1318	19.7007	18.4112	17.2468	16.1929
35	21.4872	20.0007	18.6646	17.4610	16.3742
36	21.8323	20.2905	18.9083	17.6660	16.5469
37	22.1672	20.5705	19.1426	17.8622	16.7113
38	22.4925	20.8411	19.3679	18.0500	16.8679
39	22.8082	21.1025	19.5845	18.2297	17.0170
40	23.1148	21.3551	19.7928	18.4016	17.1591
41	23.4124	21.5991	19.9931	18.5661	17.2944
42	23.7014	21.8349	20.1856	18.7235	17.4232
43	23.9819	22.0627	20.3708	18.8742	17.5459
44	24.2543	22.2828	20.5488	19.0184	17.6628
45	24.5187	22.4955	20.7200	19.1563	17.7741
46	24.7754	22.7009	20.8847	19.2884	17.8801
47	25.0247	22.8994	21.0429	19.4147	17.9801
48	25.2667	23.0912	21.1951	19.5356	18.0772
49	25.5017	23.2766	21.3415	19.6513	18.1687
50	25.7298	23.4556	21.4852	19.7620	18.2559

No. II.

annum due in any number of years, 50, inclusive.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10.	
0.9434	0.9346	0.9259	0.9174	0.9091	1
1.8334	1.8080	1.7833	1.7591	1.7355	2
2.6730	2.6243	2.5771	2.5313	2.6849	3
3.4651	2.3872	3.3121	3.2397	3.1699	4
4.2124	4.1002	3.9927	3.8897	3.7908	5
4.9173	4.7665	4.6229	4.4859	4.3543	6
5.5824	5.3893	5.2064	5 0330	4 8684	7
6.2098	5.9713	5.7466	5.5348	5.3349	8
6.8017	6.5152	6.2469	5.9952	5.7590	9
7.3601	7.0236	6.7101	6.4177	6,1446	10
7.8869	7.4987	7.1390	6 8052	6.4951	11
8.3838	7.9427	7.5361	7 1607	6.8137	12
8 8527	8.3577	7.9038	7.4869	7.1034	13
9.2950	8.7455	8.2442	7.7861	7.3677	14
9:7122	9.1079	8.5595	8.0607	7.6061	15
10.1059	9.4466	8.8514	8.3125	7.8237	16
10.4773	9.7632	9.1216	8.5436	8.0216	17
10.8276	10.0591	9.3719	8.7556	8.2014	18
11:1501	10.3356	9.6036	8.9501	8.3649	19
11.4699	10.5940	9.8181	9.1285	8.5136	20
11.7641	10.8355	10.0168	9.2922	8.6487	21
12.0416	11.0612	10.2007	9.4424	8.7715	22
12.3034	11.2722	10.3711	9.5802	8.8832	23
12:5504	11.4693	10.5288	9.7066	8.9847	24
12.7834	11.6536	10.6748	9.8226	9.0770	25
13.0032	11.8258	10.8100	9.9290	9.1609	26
13.2105	11.9867	10.9352	10.0266	9.2372	27
13.4062	12.1371	11 0511	10.1161	9.3066	28
13.5907	12.2777	11.1584	10.1983	9.3696	29
13.7648	12.4090	11.2578	10.2736	9 4269	30
13.9291	12.5318	11.3498	10.3428	9.4790	31
14.0840	12.6466	11.4350	10.4062	9.5264	32
14.2302	12.7538	11.5139	10.4644	9.5694	33
14.3681	12.8540	11.5869	10.5178	9.6086	34
14.4982	12.9477	11.6546	10.5668	9.6442	35
14.6210	13.0352	11.7172	10.6117	9.6765	36
14.7368	13.1170	11.7752	10.6530	9.7059	37
14.8460	13.1935	11.8289	10.6908	9.7327	38
14.9491	13.2649	11.8786	10.7255	9.7570	39
15.0463	13.3317	11.9246	10.7573	9.7791	40
15.1380	13.3941	11.9672	10.7866	9.7991	41
15.2245	13.4524	12.0067	10.8134	9.8174	42
15.3062	13.5070	12.0432	10.8379	9.8340	43
15.3832	13.5579	12.0771	10.8605	9 8491	44
15.4558	13.6055	12.1084	10.8812	9.8628	45
15.5244	13.6500	12.1374	10.9002	9.8753	46
15.5890	13.6916	12.1643	10.9176	9.8866	47
15.6500	13.7305	12.1891	10.9336	9.8969	48
15.7076	13.7668	12.2122	10.9482	9.9063	49
15.7619	13.8007	12.2335	10.9617	9.9148	50

TABLE

Showing how much money must be invested 1 to 50 years, to

YEARS.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.
1	970.90	966.20	961.54	956.95	952.38
2	478.26	474.79	471.34	467.95	464.58
3	314.11	311.05	308.02	305.05	302.11
4	232.07	229.23	226.43	223.68	220.97
5	182.87	180.01	177.53	174.94	172.36
6	150.10	147.50	144.96	142.47	140.02
7	126.70	124.19	121.74	119.33	116.97
8	109.18	106.74	104.35	102.02	99.73
9	95.57	93.18	90.86	88.59	86.37
10	84.69	82.36	80.09	77.88	75.72
11	75.80	73.52	71.30	69.14	67.04
12	68 41	66.18	63.99	61.88	59.83
13	62.16	59.96	57.83	55.77	53.77
14	56.82	54.66	52.57	50.55	48.59
15	52.20	50.07	48.02	46 04	44.14
16	48.16	46.07	44.06	42.12	40.26
17	44 61	42 56	40.58	38.68	36.86
18	41.47	39.44	37.50	35.63	33.85
19	38.66	36 91	34.75	32 93	31.19
20	36.13	34.17	32.29	30.50	28.80
21	33.86	31.92	30.08	28.33	26.66
22	31.71	29.89	28.08	26.36	24.73
23	29.91	28.04	26.26	24.58	22.99
24	28.20	26.35	24.60	22.95	21.40
25	26.63	24.81	23.09	21.47	19.96
26	25.18	24.38	21.70	20.12	18.63
27	23.85	22.08	20.42	18.87	17.42
28	22.62	20.87	19.24	17.72	16.31
29	21.48	19.75	18.16	16.67	15.28
30	20.41	18.72	17.14	15.69	14.34
31	19.42	18.07	16 21	14.78	13.46
32	18.49	16.85	15.34	13.94	12.65
33	17.63	16.01	14.52	13.16	11.90
34	16.82	15.23	13.76	12.42	11.20
35	16.06	14.49	13.06	11.74	10.55
36	15.34	13.80	12.39	11.11	9.94
37	14.67	13.15	11.77	10.51	9.37
38	14.04	12.54	11.19	9 96	8.84
39	13.44	11.97	10.64	9.43	8.35
40	12.88	11.43	10.12	8.94	7.88
41	12.34	10.92	9.63	8.48	7.45
42	11.84	10.43	9.17	8.04	7.04
43	11.36	9.98	8.74	7.64	6.66
44	10.90	9.54	8.33	7.25	6.30
45	10.50	9.13	7.94	6.89	5.97
46	10.06	8.75	7.58	6.55	5.65
47	9.67	8.38	7.23	6.23	5.35
48	9.30	8.03	6.91	5.92	5.06
49	8.94	7.69	6.59	5.63	4.80
50	8.61	7.38	6.30	5.36	4.55

No. 12.

every year, and compounded annually for amount to $1,000.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10.	
943.40	934.58	925.93	917.43	909.09	1
457.96	451.49	445.16	438.96	432.90	2
296.33	290.71	285.22	279.87	274.65	3
215.65	210.50	205.48	200.61	195.88	4
167.35	162.51	157.83	153.30	148.91	5
135.25	130.65	126.22	121.95	117.83	6
112.39	107.99	103.77	99.72	95.82	7
95.32	91.09	87.05	83.19	79.49	8
82.10	78.03	74.14	70.46	66.95	9
71.57	67.64	63.92	60.39	56.91	10
63.01	59.21	55.63	52.25	49.06	11
55.92	52.24	48.79	45.55	42.51	12
49.96	46.40	43.08	39.97	37.07	13
44.89	41.44	38.24	35.26	32.50	14
40.53	37.19	34.10	31.25	28.61	15
36.75	33.51	30.53	27.80	25.29	16
33.44	30.30	27.44	24.81	22.42	17
30.53	27.49	24.72	22.21	19.94	18
27.94	25.00	22.34	19.94	17.77	19
25.65	22.80	20.23	17.93	15.87	20
23.59	20.83	18.36	16.16	14.20	21
21.74	19.07	16.70	14.59	12.73	22
20.07	17.49	15.21	13.19	11.43	23
18.57	16.06	13.87	11.95	10.27	24
17.20	14.78	12.67	10.83	9.24	25
15.95	13.61	11.58	9.83	8.33	26
14.81	12.55	10.60	8.93	7.51	27
13.77	11.58	9.71	8.12	6.77	28
12.81	10.70	8.91	7.39	6.12	29
11.93	9.89	8.17	6.73	5.53	30
11.12	9.15	7.51	6.13	5.00	31
10.38	8.48	6.90	5.59	4.52	32
9.69	7.86	6.34	5.10	4.09	33
9.05	7.29	5.84	4.66	3.70	34
8.47	6.76	5.37	4.25	3.35	35
7.92	6.28	4.95	3.89	3.04	36
7.41	5.83	4.56	3.55	2.75	37
6.74	5.42	4.21	3.25	2.50	38
6.51	5.03	3.87	2.97	2.26	39
6.10	4.68	3.57	2.72	2.05	40
5.72	4.35	3.30	2.48	1.86	41
5.36	4.05	3.04	2.27	1.69	42
5.03	3.77	2.81	2.08	1.53	43
4.72	3.51	2.59	1.91	1.39	44
4.43	3.27	2.40	1.74	1.26	45
4.17	3.05	2.21	1.60	1.15	46
3.92	2.84	2.04	1.46	1.04	47
3.68	2.65	1.89	1.34	.95	48
3.46	2.47	1.75	1.23	.86	49
3.25	2.30	1 61	1.13	.78	50

TABLE

Showing how much money must be invested nually, to amount to $1,000

YEARS.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col 5.
11	$82.22	$79.57	$77.01	$74.52	$72.11
12	79.83	76.88	74.05	71.31	68.68
13	77.51	74.29	71.20	68.24	65.41
14	75.24	71 77	68.46	65.30	62.29
15	73.06	69.34	65 82	62.49	59.33
16	70 92	67.00	63.30	59.80	56.50
17	68.86	64.73	60.86	57.22	53.81
18	66.85	62.58	58.52	54.76	51.25
19	64.91	60.43	56.27	52.40	49.81
20	63.02	58.39	54.11	50.14	46.49
21	61.18	56.41	52.02	47.99	44.27
22	59.39	54.50	50.02	45.92	42.16
23	57.67	52.65	48 10	43.94	40.16
24	55.99	50.98	46.25	42.05	38.24
25	54.35	49.16	44.47	40.24	36.42
26	52.78	47.50	42.76	38.51	34.69
27	51.24	45.89	41.12	36.85	33.04
28	49.75	44.34	39.53	35.26	31.46
29	48.29	42.84	38.01	33.74	29.96
30	46 93	41.39	36.55	32.29	28.54
31	45.52	40.00	35.14	30.90	27.18
32	44.20	38.65	33.79	29.58	25.88
33	42.91	37.34	32.49	28.30	24.67
34	41.07	36.07	31.25	27.08	23 44
35	40.40	34.85	30.04	25.91	22.34
36	39.23	33.67	28.89	24.79	21.30
37	38.13	32.53	27.78	23.73	20.30
38	37.00	31.41	26.71	22.71	19.32
39	35.94	30.36	25.68	21.73	18.40
40	34.90	29.34	24.69	20.79	17.53
41	33.87	28.35	23.74	19.90	16.69
42	32.90	27.40	22.83	19.04	15.90
43	31.93	26.47	21.95	18.22	15.13
44	31.00	25.57	21.11	17.44	14.42
45	30.10	24.71	20.30	16.68	13.73
46	29.22	23.87	19.52	15.97	13.08
47	28.37	23.06	18.77	15.30	12.45
48	27.55	22.29	18 04	14.62	11.86
49	26.75	21.53	17.35	14.00	11.29
50	25.97	20.80	16.68	13.40	10.75

No. 13.

every year, for 10 years, and compounded, an- in 11 to 50 years.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10.	
$67.52	$63.22	$59.18	$55.40	$51.86	11
63.71	59.08	54.80	50.83	47.14	12
60.00	55.22	50.74	46.63	42.86	13
56.69	51.60	46.98	42.78	38.96	14
53.49	48.23	43.50	39.25	35.42	15
50.46	45.07	40.28	36.01	32.20	16
47.60	42.12	37.30	33.03	29.27	17
44.91	39.40	34.53	30.31	26.60	18
42.36	36.79	31.97	27.80	24.19	19
39.97	34.39	29.61	25.51	21.99	20
37.70	32.14	27.41	22.87	19.99	21
35.57	30.03	25.38	21.47	18.18	22
33.56	28.07	23.50	19.71	16.52	23
31.66	26.23	21.76	18.07	15.20	24
29.86	24.52	20.15	16.58	13.66	25
28.17	22.91	18.66	15.21	12.41	26
26.58	21.41	17 27	13.95	11.29	27
25.08	20.01	16.00	12.80	10.26	28
23.66	18.70	14.81	11.74	9.33	29
22.32	17.48	13.71	10.78	8.48	30
21.05	16.34	12.71	9.89	7.71	31
19.86	15.27	11.75	9.07	7.01	32
18.84	14.27	10.89	8.32	6.37	33
17.67	13.33	10.08	7.63	5.79	34
16.68	12.46	9.33	7.00	5.27	35
15.73	11.64	8.64	6.43	4.79	36
14.85	10.90	8.00	5.90	4.35	37
14.04	10.17	7.41	5.41	3.95	38
13.25	9 51	6.87	4.96	3.60	39
12.47	8.90	6.35	4.55	3.29	40
11.75	8.30	5.88	4.18	2.97	41
11.10	7.76	5.44	3.83	2,70	42
10.46	7.26	5.04	3.51	2.45	43
9.87	6.77	4.67	3.23	2.23	44
9.31	6.33	4.32	2.96	2.03	45
8.79	5.92	4.00	2.72	1.85	46
8.21	5.53	3.71	2.44	1.68	47
7.82	5.17	3.43	2.29	1.53	48
7.38	4.83	3.18	2.10	1.39	49
6.97	4.52	2.94	1.92	1.27	50

TABLE

Showing how much money must be invested nually, to amount to $1,000

YEARS.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.
16	$50.67	$48.38	$46.17	44.06	42.03
17	49 21	46.75	44.40	42.15	40.03
18	47.78	45.15	42 69	40.34	38.16
19	46 40	43 64	41.05	38.61	36.31
20	45.05	42.16	39.47	36.95	34.58
21	43.72	40.73	37.95	35.35	32.93
22	42.44	39.36	36.49	33 83	31.37
23	41 21	38.03	35.09	32.38	29.87
24	40 01	36.74	33.74	30.98	28.45
25	38.84	35.50	32.44	29.71	27.10
26	37.71	34.30	31.19	28.37	25.81
27	36.61	35.14	29.99	27.15	24.58
28	35.55	32.02	28.84	25.98	23.41
29	34 51	30.93	27.73	24.86	22.29
30	33.51	29.89	26.66	23.79	21.22
31	32.53	28.88	25.64	22.77	20.22
32	31.58	27.90	24.65	21.79	19.26
33	30 66	26.96	23 70	20.85	18.34
34	29.77	26.05	22.79	19.95	17.47
35	28.90	25.17	21.92	19.09	16.63
36	28.06	24.31	21.07	18.27	15.84
37	27.25	23.49	20.26	17.48	15.09
38	26.45	22.70	19.48	16.73	14.37
39	25.68	21.93	18.73	16.01	13.69
40	24.93	21.18	18.01	15.32	13.03
41	24.21	20.47	17.32	14.66	12.41
42	23.50	19.78	16.65	14.03	11.82
43	22.82	19.11	16.01	13.42	11.26
44	22.15	18.46	15.36	12.85	10.72
45	21.51	17.83	14.81	12.29	10.21
46	20.88	17.24	14.24	11.76	9.73
47	20 27	16.65	13.69	11.26	9.26
48	19.68	16.09	13.16	10.77	8.82
49	19 11	15.55	12.66	10.31	8.40
50	18.55	15.02	12.17	9.86	8.00

No. 14.

every year, for 15 years, and compounded, an- in 16 to 50 years.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent	Years.
Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10.	
$38.24	$34.75	$31.58	$28.67	$26.01	16
36.07	32.48	29.24	26.30	23.65	17
34.03	30.36	27.07	24.13	21.50	18
32.10	28.37	25.07	22.14	19.54	19
30.29	26 52	23.21	20.31	17.77	20
28.57	24.78	21.49	18.63	16.19	21
26.96	23.16	19.90	17.09	14.68	22
25.43	21.65	18.43	15.68	13.35	23
23.99	20.23	17.06	14.41	12.14	24
22.63	18.91	15.79	13.20	11.03	25
21.35	17.67	14.63	12.11	10.03	26
20.14	16.51	13.54	11.11	9.12	27
19.00	15.29	12.54	10.19	8.29	28
17.93	14.42	11.61	9.36	7.54	29
16.91	13.48	10.75	8.58	6.85	30
15.59	12.60	9.96	7.87	6.23	31
15.05	11.77	9.22	7.22	5.67	32
14.20	11.00	8.54	6.63	5.15	33
13 39	10.29	7.91	6.08	4.68	34
12.64	9.62	7.32	5.58	4.25	35
11.25	8.98	6.78	5.12	3.87	36
11.24	8.39	6.21	4.69	3.52	37
10.61	7.85	5.81	4.31	3.10	38
10.01	7.33	5.38	3.95	2.91	39
9.44	6.85	4.98	3.63	2.65	40
8.91	6.40	4.62	3.33	2.41	41
8.40	5.99	4.27	3.05	2.18	42
7.93	5.59	3.95	2.80	1.99	43
7.48	5.23	3.66	2.57	1.84	44
7.05	4.86	3.39	2.36	1.64	45
6 66	4.57	3.14	2.16	1.49	46
6.29	4.27	2.91	1.98	1.31	47
5.93	3 99	2.69	1.82	1.23	48
5.59	3.73	2.49	1.67	1.11	49
5.27	3.49	2.31	1.54	1.01	50

TABLE

Showing how much money must be in compounded, annually, to amount

Years.	3 Per cent.	3½ Per cent.	4 Per cent.	4½ Per cent.	5 Per cent.
	Col. 1.	Col 2	Col. 3.	Col. 4.	Col. 5.
21	$35.08	$33.01	$31.05	$29.19	$27.43
22	34.05	31.90	29.85	27.93	26,12
23	33 07	30.81	28.71	26.73	25.23
24	32.10	29.77	27.60	25.58	23.70
25	31.17	28.77	26.54	24.48	22.57
26	30.33	27.79	25.52	23.42	21.49
27	29.38	26.85	24.54	22.42	20.46
28	28.52	25.95	23.60	21.45	19.50
29	27.69	25,07	22.69	20.53	18.57
30	26.89	24.22	21.82	19.64	17.68
31	26.10	23 49	20.98	18.80	16.84
32	25.34	22.51	20.17	17.99	16.03
33	24 60	21.85	19.39	17.21	15.28
34	23.89	21.11	18.65	16.47	14.55
35	23.19	20 40	17.93	15.76	13.86
36	22.52	19.70	17.24	15.08	13.20
37	21.86	19.04	16.58	14.43	12.56
38	21.21	18.39	15.94	13.81	11.99
39	20.61	17.77	15.33	13.21	11.40
40	20.01	17·17	14.40	12.64	10.86
41	19.42	16.59	14.17	12.10	10.34
42	18.86	16.04	13.63	11.58	9.85
43	18.31	15.49	13.10	10.09	9.38
44	17.77	14.96	12.60	10.61	8.93
45	17.25	14.46	12.11	10.15	8.51
46	16.75	13.97	11.65	9.71	8.10
47	16.27	13.50	11,20	9.29	7.72
48	15.58	13.04	10.74	8.89	7.35
49	15.33	12.60	10.35	8.51	7.00
50	14.89	12.17	9.96	8.15	6.66

No. 15.

vested, every year, for 20 years, and to $1,000, in 21 to 50 years.

6 Per cent.	7 Per cent.	8 Per cent.	9 Per cent.	10 Per cent.	Years.
Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10.	
$24.19	$21.31	$18.74	$16.45	$14.43	21
22.83	19.91	17.35	15.09	13.12	22
21.53	18.61	16.06	13.83	11.23	23
20.31	17.39	14.87	12.71	10.84	24
19.17	16.25	13.77	11.66	9.86	25
18.08	15.19	12.75	10.69	8.96	26
17.06	14.19	11.80	9.81	8.15	27
16.09	13.26	10.93	9.00	7.42	28
15.18	12.40	10.12	8.26	6.73	29
14.32	11 58	9 38	7.57	6.12	30
13.55	10.83	8.68	6.95	5.56	31
12.75	10.12	8.04	6.38	5.06	32
12.02	9.46	7.44	5.85	4.60	33
10.86	8.84	6.89	5.37	4.18	34
10.70	8 27	6.38	4.92	3.80	35
10.09	7.72	5.91	4.52	3.45	36
9 52	7.22	5.47	4.14	3.15	37
8.99	6.75	5.06	3.80	2.86	38
8.48	6.30	4.69	3.49	2.60	39
8 00	5.89	4.34	3.20	2.36	40
7.54	5.51	4.02	2.93	2.15	41
7.12	5.15	3.72	2.69	1.95	42
6.72	4.81	3.45	2.48	1.77	43
6.34	4.50	3.20	2.27	1.61	44
5.98	4.20	2.96	2.08	1.47	45
5.64	3.93	2.74	1.91	1.33	46
5.32	3.67	2.53	1.75	1.21	47
5.02	3.43	2.35	1.61	1.11	48
4.73	3.20	2.17	1.47	1.00	49
4.47	2.99	2.01	1.35	.91	50

TABLE No. 16.

Actuaries' Table of Mortality.

Age.	Number living.	Deaths each year	Per cent. of deaths to the living.	Expectation of life.	Net Premiums. Actuaries' 4 per cent.	
					Level Ann. Prem. to insure $1,000 for life.	Natural Pr'm. to insure $1000 one year.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.	Col. 6.
10	100,000	676	.006760	48.36	10.43	6.50
11	99,324	674	.006786	47.68	10.63	6.53
12	98,650	672	.006812	47.01	10.84	6.55
13	97,978	671	.006848	46.33	11.07	6.59
14	97,307	671	.006896	45.64	11.30	6.63
15	96,636	671	.006944	44.96	11.54	6.68
16	95,965	672	.007003	44.27	11.80	6.73
17	95,293	673	.007062	43.58	12.07	6.79
18	94,620	675	.007134	42.88	12.35	6.86
19	93,945	677	.007206	42.19	12.64	6.93
20	93,268	680	.007291	41.49	12.95	7.01
21	92,588	683	.007377	40.79	13.27	7.09
22	91,905	686	.007464	40.09	13.61	7.18
23	91,219	690	.007564	39.39	13.96	7.27
24	90,529	694	.007666	38.68	14.33	7.37
25	89,835	698	.007770	37.98	14.72	7.47
26	89,137	703	.007887	37.27	15.13	7.58
27	88,434	708	.008006	36.56	15.56	7.70
28	87,726	714	.008139	35.86	16.01	7.83
29	87,012	720	.008275	35.15	16.48	7.96
30	86,292	727	.008425	34.43	16.97	8.10
31	85,565	734	.008578	33.72	17.49	8.25
32	84,831	742	.008747	33.01	18.04	8.41
33	84,089	750	.008919	32.30	18.62	8.58
34	83,339	758	.009095	31.58	19.23	8.75
35	82,581	767	.009288	30.87	19.87	8.93
36	81,814	776	.009485	30.15	20.54	9.12
37	81,038	785	.009687	29.44	21.26	9.31
38	80,253	795	.009906	28.72	22.02	9.53
39	79,458	805	.010131	28.00	22.82	9.74
40	78,653	815	.010362	27.28	23.68	9.96
41	77,838	826	.010612	26.56	24.59	10.20
42	77,012	839	.010894	25.84	25.55	10.48
43	76,173	857	.011251	25.12	26.59	10.82
44	75,316	881	.011697	24.40	27.68	11.25
45	74,435	909	.012212	23.69	28.85	11.74
46	73,526	944	.012839	22.97	30.08	12.35
47	72,582	981	.013517	22.27	31.39	13.00
48	71,601	1,021	.014260	21.56	32.77	13.71
49	70,580	1,063	.015061	20.87	34.23	14.48
50	69,517	1,108	.015939	20.18	35.78	15.33
51	68,409	1,156	.016898	19.50	37.42	16.25
52	67,253	1,207	.017947	18.82	39.15	17.26
53	66,046	1,261	.019093	18.16	41.00	18.36
54	64,785	1,316	.020313	17.50	42.95	19.53

TABLE No. 16. —CONTINUED.

Actuaries' Table of Mortality.

AGE.	Number living.	Deaths each year.	Per cent. of deaths to the living.	Expectation of life.	NET PREMIUMS. Actuaries' 4 per cent.	
					Level Ann. Prem. to insure $1,000 for life.	Natural Pr'm. to insure $1000 one year.
	Col 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.	Col. 6.
55	63,469	1,375	.021664	16.86	$45.03	$20.83
56	62,094	1,436	.023126	16.22	47.23	22.24
57	60,658	1,497	.024679	15.59	49.57	23.73
58	59,161	1,561	.026386	14.97	52.07	25.37
59	57,600	1,627	.028247	14.37	54.72	27.16
60	55,973	1,698	.030336	13.77	57.56	29.17
61	54,275	1,770	.032612	13.18	60.57	31.36
62	52,505	1,844	.035120	12.61	63.78	33.77
63	50,661	1,917	.037840	12.05	67.20	36.38
64	48,744	1,990	.040826	11.51	70 84	39.26
65	46,754	2,061	.044082	10.97	74.72	42.39
66	44,693	2,128	.047614	10.46	78.85	45.78
67	42,565	2,191	.051474	9.96	83.24	49.49
68	40,374	2,246	.055630	9.47	87.91	53.49
69	38,128	2,291	.060087	9.00	92.89	57.78
70	35,837	2,327	.064933	8.54	98.20	62.44
71	33,510	2,351	.070158	8.10	103.87	67.46
72	31,159	2,362	.075805	7.67	109.91	72.89
73	28,797	2,358	.081884	7.26	116.36	78.73
74	26,439	2,339	.088468	6.86	123.25	85.07
75	24,100	2,303	.095560	6.48	130.61	91.89
76	21,797	2,249	.103179	6.11	138.49	99.21
77	19,548	2,179	.111469	5.76	146.94	107.18
78	17,369	2,092	.120444	5.42	155.98	115.81
79	15,277	1,987	.130065	5.09	165.68	125.06
80	13,290	1,866	.140406	4.78	176.10	135.01
81	11,424	1,730	.151436	4.48	187.32	145.61
82	9,694	1,582	.163194	4.18	199.49	156.92
83	8,112	1,427	.175912	3.90	212.78	169.15
84	6,685	1,268	.189678	3.63	227.42	182.38
85	5,417	1,111	.205095	3.36	243.73	197.21
86	4,306	958	.222480	3.10	262.03	213.92
87	3,348	811	.242234	2.84	282.69	232.92
88	2,537	673	.265274	2.59	306.23	255.07
89	1,864	545	.292382	2.35	333.15	281.14
90	1,319	427	.323730	2.11	363.90	311.28
91	892	322	.360987	1.89	399.27	347.10
92	570	231	.405263	1.67	439.95	389.68
93	339	155	.457227	1.47	486.07	439.64
94	184	95	.516304	1.28	537.29	496.45
95	89	52	.584270	1.12	592.71	561.80
96	37	24	.648640	.99	645.62	623.70
97	13	9	.692308	.89	693.08	665.68
98	4	3	.750000	.75	767.74	721.15
99	1	1	1.000000	.50	961.54	961.54

TABLE No. 17.

American Experience Table of Mortality.

Age.	Number living.	Deaths each year.	Per cent. of deaths to the living.	Expectation of life.	Net Premiums. American—4 per cent.	
					Level Ann. Prem. to insure $1,000 for life.	Natural Pr'm. to insure $1000 one year.
	Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.	Col. 6.
10	100,000	749	.007490	48.72	10.53	7.20
11	99,251	746	.007516	48 08	10.70	7.23
12	98,505	743	.007543	47.45	10.88	7.25
13	97,762	740	.007569	46.80	11.06	7.28
14	97,022	737	.007596	46.16	11.26	7.30
15	96,285	735	.007634	45.50	11.47	7.34
16	95,550	732	.007661	44.85	11.69	7.37
17	94,818	729	.007688	44.19	11.91	7.39
18	94,089	727	.007727	43.53	12.15	7.43
19	93,362	725	.007765	42.87	12.40	7.46
20	92,637	723	.007805	42.20	12.67	7·50
21	91,914	722	.007855	41.53	12.95	7·55
22	91,192	721	.007906	40.85	13.24	7·60
23	90,471	720	.007958	40.17	13.55	7·65
24	89,751	719	.008011	39.49	13.87	7·70
25	89,032	718	.008065	38.81	14.21	7·75
26	88,314	718	.008130	38.12	14.57	7.82
27	87,596	718	.008197	37.43	14.95	7.88
28	86,878	718	.008264	36.73	15.35	7.95
29	86,160	719	.008345	36.03	15.77	8.02
30	85,441	720	.008427	35.33	16.21	8.10
31	84,721	721	.008510	34.63	16.68	8.18
32	84,000	723	.008607	33.93	17.18	8.28
33	83,277	726	.008718	33.21	17.70	8.38
34	82,551	729	.008831	32.50	18.26	8.49
35	81,822	732	.008946	31.78	18.84	8.60
36	81,090	737	.009089	31.07	19.46	8.74
37	80,353	742	.009234	30.35	20.12	8.88
38	79,611	749	.009408	29.62	20.82	9.05
39	78,862	756	.009586	28.90	21.57	9.22
40	78,106	765	.009794	28.18	22.35	9.42
41	77,341	774	.010008	27.45	23.19	9.62
42	76,567	785	.010252	26.72	24.08	9.86
43	75,782	797	.010517	26.00	25.03	10.11
44	74,985	812	.010829	25.27	26.04	10.41
45	74,173	828	.011163	24.54	27.12	10.73
46	73,345	848	.011562	23.81	28.27	11.12
47	72,497	870	.012000	23.08	29.50	11.54
48	71,627	896	.012509	22.36	30.81	12.03
49	70,731	927	.013106	21.63	32.21	12.60
50	69,804	962	.013781	20.91	33.70	13.25
51	68,842	1,001	.014541	20.20	35.29	13.98
52	67,841	1,044	.015389	19.49	36.98	14.80

TABLE No. 17. —CONTINUED.

American Experience Table of Mortality.

AGE.	Number living.	Deaths each year.	Per cent. of deaths to the living.	Expectation of life.	NET PREMIUMS. American—4 per cent.	
					Level Ann. Prem. to insure $1,000 for life.	Natural Pr'm. to insure $1000 one year.
	Col 1.	Col. 2.	Col. 3.	Col 4.	Col. 5.	Col. 6
53	66,797	1,091	.016333	18.79	$38.79	$15.71
54	65,706	1,143	.017396	18.09	40.73	16.73
55	64,563	1,199	.018571	17.40	42.79	17.86
56	63,364	1,260	.019885	16.72	45.00	19.12
57	62,104	1,325	.021335	16.05	47.35	20.52
58	60,779	1,394	.022936	15.39	49.87	22.05
59	59,385	1,468	.024720	14.74	52.57	23.77
60	57,917	1,546	.026693	14.10	55.45	25.67
61	56,371	1,628	.028880	13.47	58.54	27.77
62	54,743	1,713	.031292	12.86	61.84	30.09
63	53,030	1,800	.033943	12.26	65.39	32.64
64	51,230	1,889	.036873	11.67	69.18	35.46
65	49,341	1,930	.040129	11.10	73.25	38.59
66	47,361	2,070	.043707	10.54	77.61	42.03
67	45,291	2,158	.047647	10.00	82.28	45.82
68	43,133	2,243	.052002	9.47	87.29	50.00
69	40,890	2,321	.056762	8.97	92.65	54.58
70	38,569	2,391	.061993	8.48	98.39	59.61
71	36,178	2,448	.067665	8.00	104.54	65.07
72	33,730	2,487	.073733	7.55	111.13	70.81
73	31,243	2,505	.080178	7.11	118 21	77.09
74	28,738	2,501	.087028	6.68	125.85	83.68
75	26,237	2,476	.094371	6.27	134.14	90.74
76	23,761	2,431	.102311	5.88	143.19	98.38
77	21,330	2,369	.111064	5.49	153.13	106.79
78	18,961	2,291	.120827	5.11	164.11	116.18
79	16,670	2,196	.131784	4.74	176·30	126.67
80	14,474	2,091	.144466	4.39	189.87	138.91
81	12,383	1,964	.158605	4.05	204.95	152.89
82	10,419	1,816	.174297	3.71	221.82	167.59
83	8,603	1,648	.191561	3.39	240.90	184.19
84	6,955	1,470	.211359	3.08	262.88	203.23
85	5,485	1,292	.235552	2.77	288.60	226.49
86	4,193	1,114	.265681	2.47	318.81	255.46
87	3,079	933	.303020	2.18	354.03	291.37
88	2,146	744	.346692	1.91	394.52	333.36
89	1,402	555	.395863	1.66	441.22	380.64
90	847	385	.454545	1.42	497.08	437.06
91	462	246	.532466	1.19	566.27	511.98
92	216	137	.634259	.98	649.34	609.86
93	79	58	.734177	.80	736.31	705.94
94	21	18	.857143	.64	840.75	824.18
95	3	3	1.000000	.50	961.54	961.54

TABLE No. 18.

Constructed from the American Experience Table of Mortality, showing the chances, at a given age, of dying within a specified number of years thereafter.

Age.	Chances in 100 of dying within 10 years.	Chances in 100 of dying within 15 years.	Chances in 100 of dying within 20 years.	Chances in 100 of dying within 25 years.	Chances in 100 of dying within 30 years.	Chances in 100 of dying within 35 years.
20	7.77	11.67	15.69	19.93	24.65	30.31
25	8.10	12.27	16.67	21.60	27.48	34 95
26	8.18	12.43	16.95	22.05	28.25	36.20
27	8.27	12.59	17.24	22.55	29.10	37.51
28	8.37	12.77	17.55	23.11	30.04	38.96
29	8.47	12.97	17.91	23.74	31.08	40.54
30	8.59	13.19	18.30	24.43	32.21	42.25
31	8.71	13.43	18.74	25.21	33.46	44.10
32	8.85	13.69	19.24	26.07	34.83	46.08
33	9.00	13.99	19.79	27.02	36.32	48.21
34	9.17	14.32	20.41	28.06	37.94	50.47
35	9.35	14.69	21.09	29.22	39.70	52.86
36	9.55	15.10	21.86	30.48	41.59	55.39
37	9.78	15.57	22.71	31.87	43.63	58.02
38	10.03	16.10	23.66	33.39	45.82	60.76
39	10.31	16.68	24.70	35.04	48.15	63.56
40	10.63	17.34	25.85	36.83	50.62	66.41
41	10.99	18.07	27.11	38.76	53.22	69.28
42	11.40	18.89	28.50	40.85	55.95	72.14
43	11.86	19.80	30.02	43.08	58.77	74.99
44	12.37	20.80	31.68	45.47	61.68	77.77
45	12.96	21.92	33.48	48.00	64 63	80.49
46	13.61	22.14	35.43	50.67	67.60	83.12
47	14.34	24.49	37.53	53.47	70.58	85.63
48	15.15	25.96	39.78	56.38	73.53	87.99
49	16.04	27.58	42.19	59.37	76.43	90.17
50	17.03	29.32	44.75	62.41	79.26	92.14
51	18.12	31.20	47.45	65.48	82.01	
52	19.31	33.24	50.28	68.56	84.64	
53	20.61	35.43	53.23	71.61	87.14	
54	22.03	37.77	56.26	74.63	89.41	
55	23.58	40.26	59.36	77.58	91.50	
56	25.26	42.91				
57	27.07	45.69				
58	29.03	48.60				
59	31.14	51.61				
60	33.41	54.70				
61	35.82					
62	38.39					
63	41.08					
64	43.90					
65	46.83					
66	49.83					
67	52.90					
68	56.05					
69	59.15					
70	62.40					

Explanation.—At age 40, what are the chances of living 20 years longer? By looking under the heading "Chances in 100 of dying within 20 years," at the right of age 40, there will be found 25.85. Subtracting this from 100 leaves 74.15 A little more than 74 chances in a hundred to *live*, and a trifle less than 26 chances to die, in the next 20 years, and similarly with reference to any other age or time.

TABLE No. 19.

Age.	Reserve Accumulations. Actuaries 4 per cent.	Face value of policy.	Insurance at risk.
	Col. 1.	Col. 2.	Col. 3.
36	End 1st year.	$114.81	$10,000	$9,885.19
37	" 2d "	233.38	10,000	9,766.62
38	" 3d "	355.90	10,000	9,644.10
39	" 4th "	482.47	10,000	9,517.53
40	" 5th "	613.38	10,000	9,386.62
41	" 6th "	748.56	10,000	9,251.44
42	" 7th "	888.43	10,000	9,111.57
43	" 8th "	1,032.89	10,000	8,967.11
44	" 9th "	1,181.60	10,000	8,818.40
45	" 10th "	1,334.12	10,000	8,665.88
46	" 11th "	1,490.16	10,000	8,509.84
47	" 12th "	1,649.17	10,000	8,350.83
48	" 13th "	1,811.06	10,000	8,188.94
49	" 14th "	1,975.65	10,000	8,024.35
50	" 15th "	2,143.00	10,000	7,857.00
51	" 16th "	2,312.84	10,000	7,687.16
52	" 17th "	2,484.97	10,000	7,515.03
53	" 18th "	2,959.22	10,000	7,340.78
54	" 19th "	2,835.41	10,000	7,164.59
55	" 20th "	3,013.47	10,000	6,986.53
56	" 21st "	3,193.20	10,000	6,806.80
57	" 22d "	3,374.33	10,000	6,625.67
58	" 23d "	3,556.89	10,000	6,443.11
59	" 24th "	3,740.63	10,000	6,259.37
60	" 25th "	3,925.28	10,000	6,074.72
61	" 26th "	4,110.22	10,000	5,889.78
62	" 27th "	4,295.20	10,000	5,704.80
63	" 28th "	4,479.76	10,000	5,520.24
64	" 29th "	4,663.63	10,000	5,336.37
65	" 30th "	4,846.38	10,000	5,153.62
66	" 31st "	5,027.75	10,000	4,972.25
67	" 32d "	5,207.18	10,000	4,972.82
68	" 33d "	5,384.50	10,000	4,615.50
69	" 34th "	5,559.47	10,000	4,440.53
70	" 35th "	5,732.01	10,000	4,267.99
75	" 40th "	6,550.10	10,000	3,449.90
80	" 45th "	7,281.49	10,000	2,718.51
100	" 65th "	10,000.00	10,000	0,000.00

TABLE No. 19.—CONTINUED.

1 Per cent. of reserve.	2 per cent. of reserve.	3 per cent. of reserve.	4 per cent. of reserve.	AGE.
Col. 4.	Col. 5.	Col. 6.	Col. 7.	
$1.15	$2.30	$3.45	$4.60	36
2.33	4.66	6.99	9.32	37
3.56	7.12	10.68	14.24	38
4.82	9.64	14.46	19.28	39
6.13	12.26	18.39	24.52	40
7.49	14.98	22.47	29.96	41
8.88	17.76	26.64	35.52	42
10.33	20.66	30.99	41.32	43
11.82	23.64	35.46	47.28	44
13.34	26.68	40.02	53.36	45
14.90	29.80	44.70	59.60	46
16.49	32.98	49.47	65.96	47
18.11	36.22	54.33	72.44	48
19.76	39.52	59.28	79.04	49
21.43	42.86	64.29	85.72	50
23.13	46.26	69.39	92.52	51
24.85	49.70	74.55	99.40	52
26.59	53.18	79.77	106.36	53
28.35	56.70	85.05	113.40	54
30.13	60.26	90.39	120.52	55
31.93	63.86	95.80	127.73	56
33.74	67.49	101.23	134.97	57
35.57	71.13	106.70	142.27	58
37.41	74.81	112.21	149.62	59
39.25	78.50	117.75	157.00	60
41.10	82.20	123.31	164.41	61
42.95	85.90	128.86	171.81	62
44.80	89.59	134.39	179.19	63
46.64	93.27	139.90	186.54	64
48.46	96.92	145.38	193.84	65
50.28	100.55	150.83	201.11	66
52.07	104.14	156.21	208.28	67
53.85	107.69	161.53	215.38	68
55.59	111.19	166.78	222.37	69
57.32	114.64	171.96	229.28	70
65.50	131.00	196.50	262.00	75
72.81	145.62	218.43	291.24	80
100.00	200.00	300.00	400.00	100

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